User's Manual

Wireless LAN 802.11b/g Device

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Version 2.0

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1 Introduction

Welcome!

Your HP PC includes a Wireless LAN 802.11b/g Device. This device allows you to establish a wireless network using your HP PC as a Wireless Access Point or as a Wireless Client (Station Mode) if you already have a wireless network running.

Today, millions of people are installing 802.11 Access Points (Gateways) for wireless networking. Your HP PC is communicating wirelessly via an embedded Wireless LAN 802.11b/g Device. The Wireless Software Access Point (SoftAP™) available on your HP PC is capable of turning your HP PC into a wireless Access Point (Gateway) enabling other wireless LAN products to connect to the internet through your HP PC securely with high-speed access.

The main purpose of the SoftAP™ , once activated, is to provide two modes of accessing the internet: Station Mode (Client Mode) or Access Point Mode (AP Mode).

Important
It is required that you already have internet access established through an ISP prior to using the SoftAP™ . For further information, please consult your ISP.

If you have already established a wireless network with access to the internet and you would like to wirelessly connect this HP PC to your wireless network, use **Station Mode**.

If your HP PC is connected to the internet and you would like instructions on how to configure for other machines to share the internet connection through this HP PC please refer to Chapter 7, **Activating Access Point Mode** for information on initiating AP Mode.

1.1 Inventory Checklist

Included with your HP PC should be the following items for your Wireless LAN 802.11b/g Device:

- CD-ROM (Contains full User's Manual)
- Antenna (Screws to the connector on the back of your HP PC. See Chapter 2)
- Printed Quick Install Guide

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1.2 Supported Security

In order to secure your network from passive or active intrusion four key features are enabled on the Software Access Point:

- WPA personal security
- WEP encryption
- MAC filtering

Please see Chapter 4 for information on security settings for your Wireless LAN 802.11b/g Device or refer to the chapters on ***Windows® XP Wireless Zero Configuration***, **Access Point Mode** or **Station Mode** for detailed information regarding the set up of either WEP or WPA security and the use of MAC Filtering.

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2 Antenna Attachment

This chapter contains instructions for antenna installation.

Important
It is assumed that there is an existing wireless LAN network with an internet connection that has been set up on your computer prior to using the Software Access Point. Please consult your ISP for further information.

If you have already attached the antenna to your HP PC, please skip to Chapter 3.

1. Screw the antenna connector (**A**) to the antenna jack (**B**) located on the back of the HP PC.

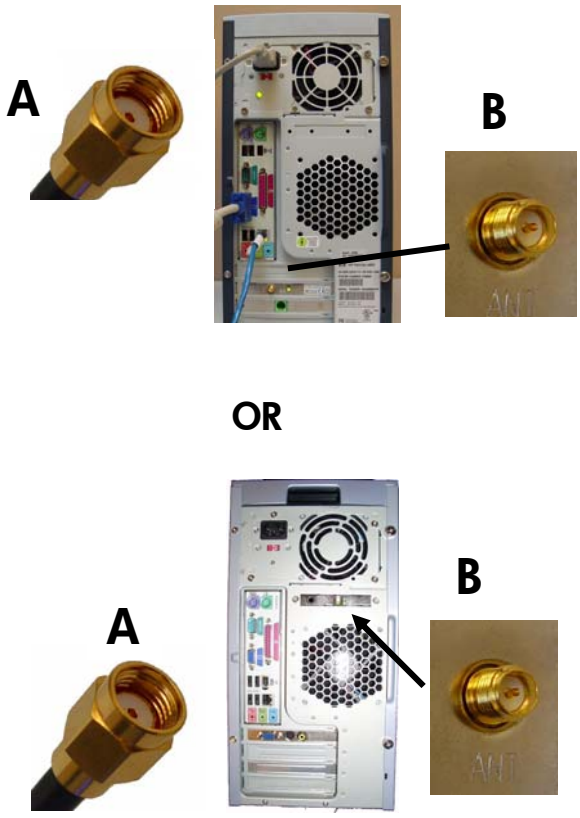

Figure 1: Antenna Attachment

2. Place the HP PC on a table or place the antenna in an elevated and open area to achieve the best wireless performance.

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3 Verifying your Service Pack

Your system is running the Microsoft® XP Operating System with either Service Pack 1(SP1) or Service Pack 2 (SP2).

Due to differences in appearance between SP1 and SP2 it is important to check which you are running prior to using this User's Manual.

In order to verify the level of Microsoft® XP being used proceed with the steps shown below.

Figure 2: Accessing Systems Information

1. Select **Start** in the lower left of your display.
   The Start menu will appear.
2. Right click on **My Computer** to access a menu of options for your computer.
3. Select **Properties**

The system properties dialog box will appear as shown.

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Figure 3: Verification of Service Pack

Under the General tab check System information. The Service Pack will be listed as shown above.

- **Service Pack 1**
  If your system lists "Service Pack 1" then begin with Chapter 6, Service Pack 1: Windows® XP Wireless Zero Configuration.

- **Service Pack 2**
  If your system lists "Service Pack 2" then begin with Chapter 5, Service Pack 2: Windows® XP Wireless Zero Configuration.

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4 Security Settings

Security can be set up using WEP (Wired Equivalency Protocol) or WPA (Wi-Fi Protected Access). It is important to set up matching security types between 802.11 devices. Be certain to check the type of security on your other wireless 802.11b/g device(s) in order to decide which type of security needs to be set up on your HP PC.

WEP security was the original security standard provided for wireless 802.11 devices. WPA security is a more recent standard of security available, yet all 802.11b/g devices are not yet compatible with the WPA standard.

Note: *WPA security can either be "WPA Personal TKIP" or "WPA Personal AES". There is no noticeable difference between these types of WPA nor is there a difference when establishing either in the SoftAP™ . It is only necessary to ensure WPA TKIP and AES compliance with the other 802.11b/g devices you are connecting if you wish to set up WPA security. If your other 802.11b/g devices do not list either TKIP or AES they are most likely compliant with both.*

After deciding which type of security you need to use with your Wireless LAN 802.11b/g Device refer to the Chapters about individual Modes for information on establishing either WEP or WPA security:

- ***Windows® XP Wireless Zero Configuration*** :
  To verify your Service Pack see Chapter 3.
  - Service Pack 1: Windows XP® Wireless Zero Configuration.
    For information on establishing either WEP or WPA security see Chapter 6, section 6.2.
  - Service Pack 2: Windows XP® Wireless Zero Configuration.
    For information on establishing security see Chapter 5.

- **Access Point Mode (AP Mode)**:
  For information on establishing either WEP or WPA security see Chapter 8, section 8.3.

  Note: *In order to use Access Point Mode (AP Mode) you must first activate your HP PC to AP Mode (See Chapter 7).*

- **Station Mode**:
  For information on establishing either WEP or WPA security see Chapter 3, to verify your Service Pack.

  For information on using Station Mode after converting to AP Mode see Chapter 9.

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5 Service Pack 2: Windows® XP Wireless Zero Configuration

This chapter contains information on configuring your HP PC for Station Mode (as a client) if you do not wish to convert to Access Point Mode (AP Mode). The pictures and instructions refer to those using Windows XP® Service Pack 2. If you are using Windows® XP Service Pack 1 please refer to Chapter 6 for instructions.

It is necessary to complete the steps in Chapter 2, Antenna Attachment and Chapter 3, Verifying your Service Pack, prior to using Windows® XP Wireless Network Configuration.

Note: *It is assumed that there is an existing wireless network with connection to the internet. If not, please consult your ISP for further information on establishing an internet connection.*

If you have already established a wireless network with access to the internet and you would like to wirelessly connect this HP PC to your wireless network, use **Station Mode**. Due to Windows® XP *Zero Configuration* (Windows® XP Wireless Network Configuration) your HP PC is currently running the SoftAP™ in Station or Client Mode. To continue using your HP PC in Station Mode you will need only to set-up the security (See Chapter 6 for Windows® XP Service Pack 1 or Chapter 5 for Windows® XP Service Pack 2).

If your HP PC is connected to the internet and you would like instructions on how to configure for other machines to share the internet connection through this HP PC please refer to Chapter 7, **Activating Access Point Mode,** for information on AP Mode.

5.1 Launching Microsoft® Windows® XP Wireless Network Configuration

To launch Windows® XP Wireless Network Configuration:

1. In the Systems Tray find the Wireless Networking icon.

Figure 4: Wireless Network Icon

Note: *There may be multiple Network icons in the system tray. Choose the one for Wireless Network Connection as shown.*

2. Select **View Available Wireless Networks** and the Wireless Network Connection dialog box will appear.

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5.2 Setting the Network Key Automatically

The PC will begin functioning in Station Mode (as a Client) with your Wireless LAN Network as soon as the Network Key is set-up.

Important
If you do not have an existing wireless network you will need to set up your Gateway prior to using your PC in Station Mode. *If you are attempting to set your PC up to function as an Access Point please see Chapter 7.*

1. Find the Network Key (WEP Key or WPA Key) for your Wireless Network.

2. Select **View Available Wireless Networks** from the Wireless Network icon menu.
The Wireless Network Connection dialog box will appear.

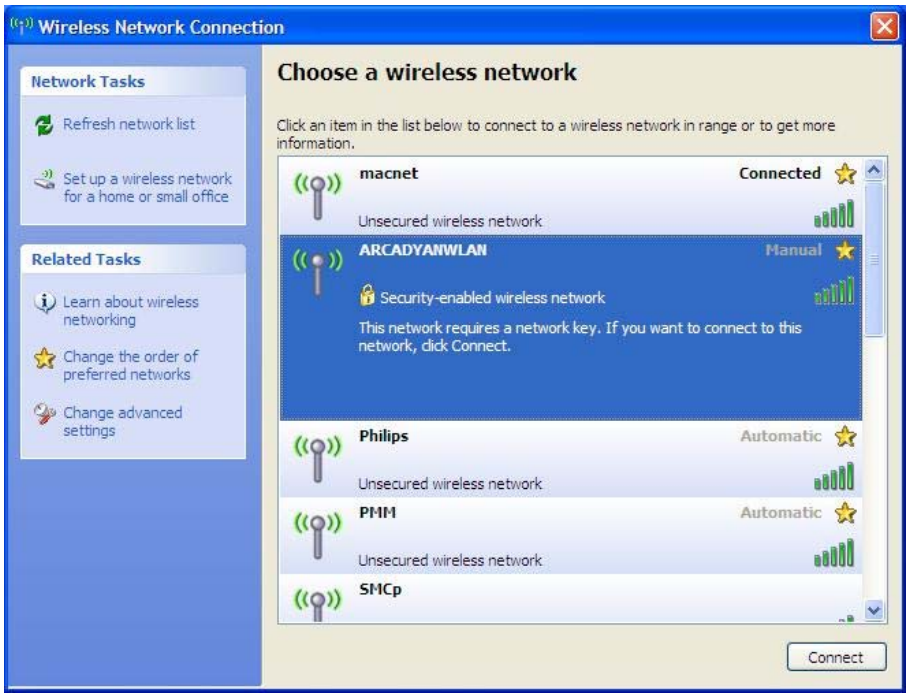

Figure 5: Wireless Network Connection dialog box

3. Select the Wireless Network of your choice by clicking on its name and the entire block will become highlighted

4. Select **Connect** in the lower right corner

The Wireless Network Connection dialog box will appear as shown below.

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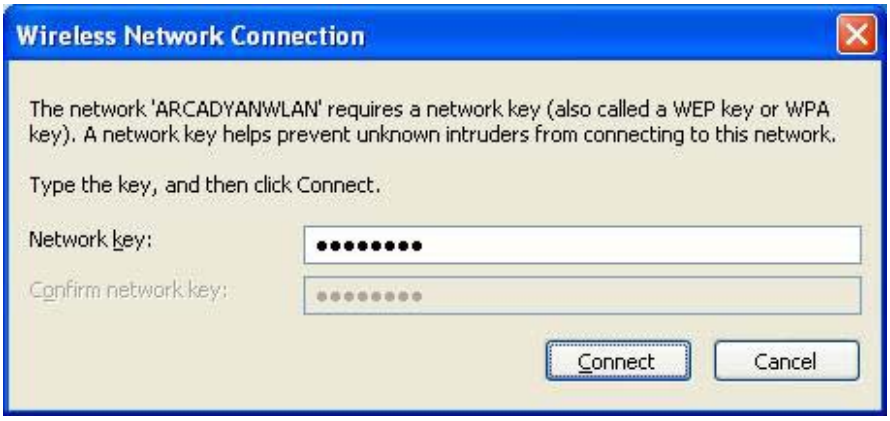
Wireless Network Connection
The network 'ARCADYANWLAN' requires a network key (also called a WEP key or WPA key). A network key helps prevent unknown intruders from connecting to this network.
Type the key, and then click Connect.
Network key:
Confirm network key:
Connect
Cancel

Figure 6: Wireless Network Connection dialog box

5. Enter your Network Key (WEP Key or WPA Key) for your Wireless Network.

6. Input the Network Key a second time into the "Confirm network key" box.

Note: *If your network is using WEP encryption, then a HEX or an ASCII format is necessary when entering your Network Key:*

- *HEX: 10 Characters in HEX notation for 40 bit or 26 characters for 128 bit encryption.*
- *ASCII: 5 characters for 40 bit or 13 characters for 128 bit encryption.*

If your network is using WPA it is necessary to enter an 8 – 63 character alphanumeric key-phrase.

The Network Key will accept any of these as it supports both WEP and WPA.

7. Select **Connect**

The Wireless Network Connection dialog box appears as you are being connected.

Wireless Network Connection
Please wait while Windows connects to the 'ARCADYANWLAN' network.
Waiting for the network...
Cancel

Figure 7: Connecting to Wireless

After connection to the network the Wireless Network Connection dialog box will reappear showing the connection as shown in Figure 8.

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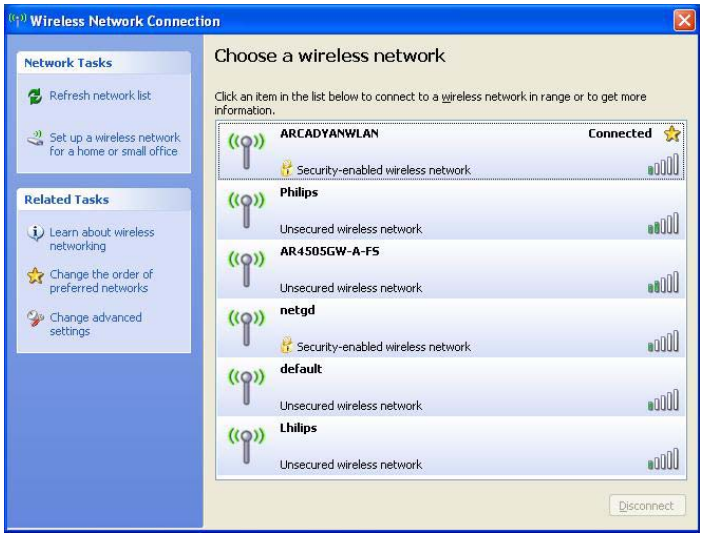


Figure 8: Wireless Network Connection dialog box

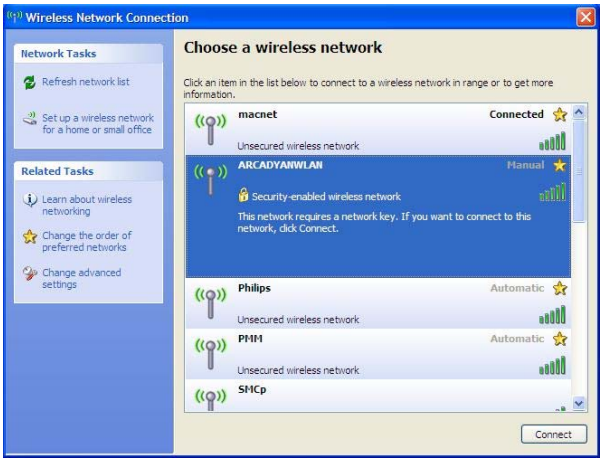
5.3 Setting the Network Key Manually

Your HP PC is functioning in Station or Client Mode by default. After launching the application (See Section 5.1, Launching the application) you will need to input the Network name and Network Key. The Network name and Network Key must both be set up for your HP PC to function with your current network in Station Mode.

Before manually setting up the Network name and Network Key on your HP PC you must identify this information on your current wireless network:

- Network name (SSID)
- Security WPA-PSK Key OR Security WEP Key

The Wireless Network Connection dialog box appears when you have launched Windows® XP Wireless Zero Configuration:



Note: *Your Network name will appear in the Available wireless networks box. Any other listed available wireless networks represent the wireless networks established within range of your HP PC. These will vary and do not provide secured access to the internet.*

Figure : Wireless Network Connection dialog box

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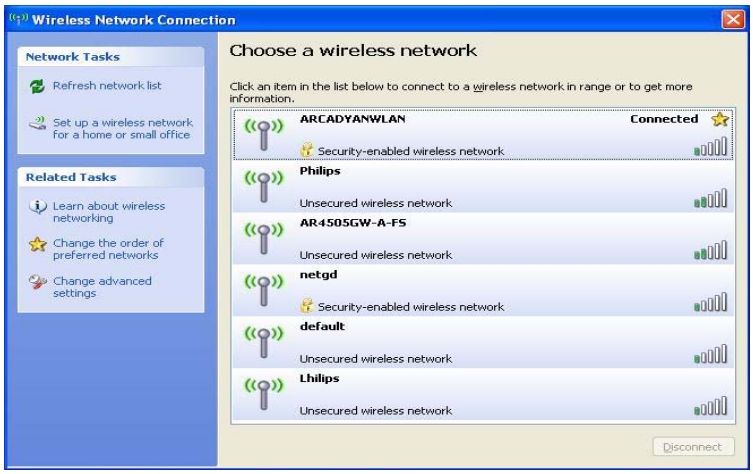

Figure 9: Wireless Network Connection dialog box

1. Choose your Wireless Network in the Available wireless networks selection box. Your network will become highlighted as shown in figure 9.
2. Select **Change advanced settings** found on the left side of the dialog box.

The Wireless Network Connection Properties dialog box appears.

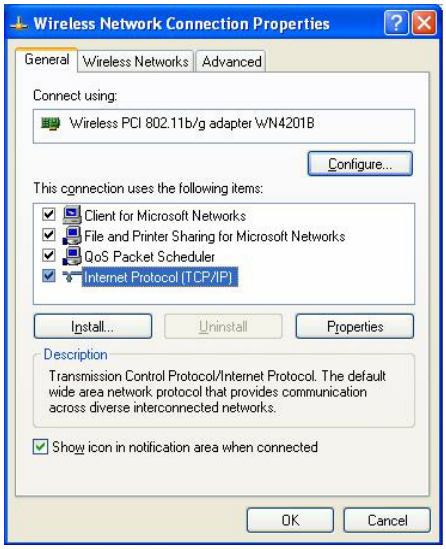

Figure 10: Wireless Network Connection Properties dialog box

3. Select the **General** tab in the Wireless Network Connection Properties dialog box.
4. Highlight **Internet Protocol (TCP/IP)** in the "This connection uses the following items:" selection box.
5. Select **Properties**.

The Internet Protocol (TCP/IP) Properties dialog box appears with the General tab displayed.

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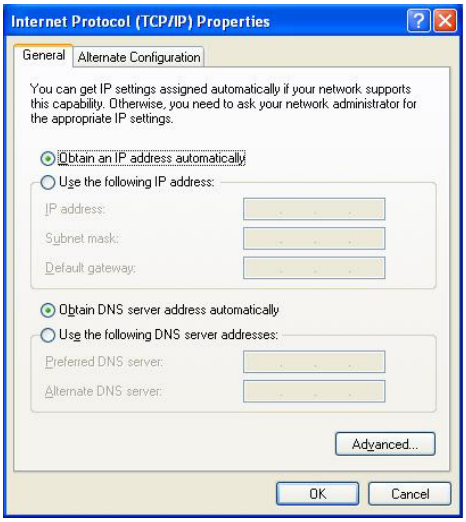
Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Figure 11: Internet Protocol (TCP/IP) Properties dialog box

6. Verify that the following choices are selected:
   - Obtain an IP address automatically
   - Obtain DNS server address automatically

Note: *Obtaining an IP address automatically is recommended. If static IP address settings are preferred, refer to your own wireless network settings.*

7. Select **OK**.

You are returned to the Wireless Network Connection Properties dialog box.

For instructions on how to set WEP security refer to Section 5.3.1. For instructions on how to set WPA security refer to Section 5.3.2.

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5.3.1 WEP: Setting the Network Key (Network Security)

Securing your Software Access Point enabled network is essential in a wireless network environment. Security for the Software Access Point is maintained through the following features:

- Support for WPA (WPA-Personal Security (Wi-Fi protected access) AES and TKIP)
- Support for the WEP (Wired Equivalency Protocol)
- Support for MAC address filtering

This section gives instruction on how to correctly set up WEP security on your HP PC. If you are currently running a WPA enabled device, skip to Section 5.3.2, WPA: Setting the Network Key (Network Security).

In order to set up your Network Key (WEP security feature) you will need to do the following:

1. Open the Wireless Network Connection Properties dialog box:

   - Right click on the Wireless Networks icon in the system tray.
   - Select **View Available Wireless Networks** from the Wireless Networks icon menu.

   The Wireless Network Connection dialog box appears.

   - Select **Change advanced settings** on the left side of the dialog box**.**

   The Wireless Network Connection Properties dialog box appears.

   - Select the Wireless Networks tab as shown in figure 12 below.

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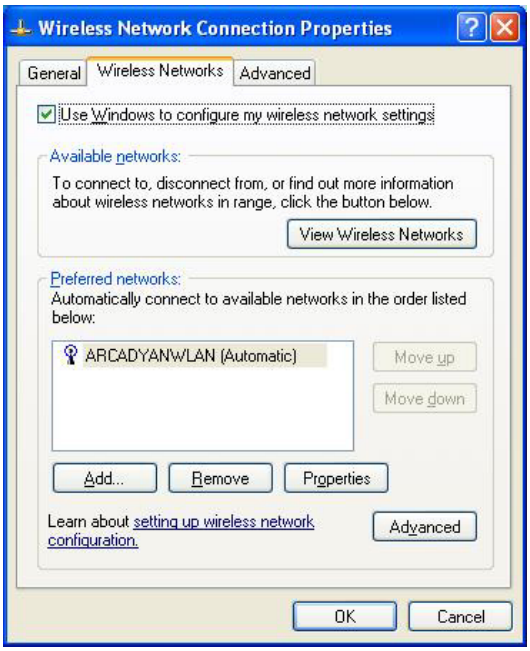

Figure 12: Manually adding a Wireless Network

2. Select **Add** under the Preferred networks selection box.
The Wireless Network Properties dialog box appears.

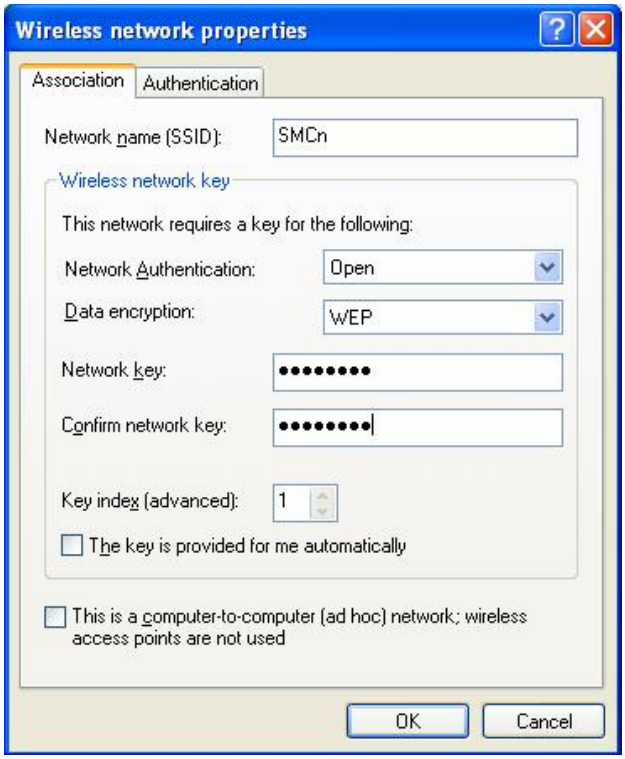

Figure 13: Wireless network properties dialog box

3. Input your Network name (SSID).
4. Uncheck the box "The key is provided for me automatically".
5. Verify that the Network Authentication is set to **Open**.

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6. Verify that the Data Encryption is set to **WEP**.
7. Input the Network Key of your Access Point, Wireless Broadband Router or Wireless Gateway.

Note: *Either a HEX or ASCII format is necessary when using the WEP interface. Your WEP enabled device should already have either HEX or ASCII format pass-phrase associated. Consult the information asked for in section 5.2.*

- *HEX: 10 characters in HEX notation for 40 bit, or 26 characters for 128 bit.*
- *ASCII: 5 characters for 40 bit, 13 characters for 128 bit.*

8. Input the Network Key a second time into the "Confirm network key" box.
9. Select **OK**.

You are returned to the Wireless Network Connection Properties dialog box and are able to verify your connection.

5.3.2 WPA: Setting the Network Key (Network Security)

Securing your Software Access Point enabled network is essential in a wireless network environment. Security for the Software Access Point is maintained through the following features:

- Support for WPA (WPA-Personal Security (Wi-Fi protected access) AES and TKIP)
- Support for the WEP (Wired Equivalency Protocol)
- Support for MAC address filtering

This section gives instruction on how to correctly set up WPA security on your HP PC. If you are currently running a WEP enabled device, return to Section 5.3.1, WEP: Setting the Network Key (Network Security).

In order to set up your Network Key (WPA security feature) you will need to do the following:

1. Open the Wireless Network Connection Properties dialog box:

   - Right click on the Wireless Networks icon in the system tray.
   - Select **View Available Wireless Networks** from the Wireless Networks icon menu.

   The Wireless Network Connection dialog box appears.

   - Select **Change advanced settings** on the left side of the dialog box**.**

   The Wireless Network Connection Properties dialog box appears.

   - Select the Wireless Networks tab as shown in figure 14 below.

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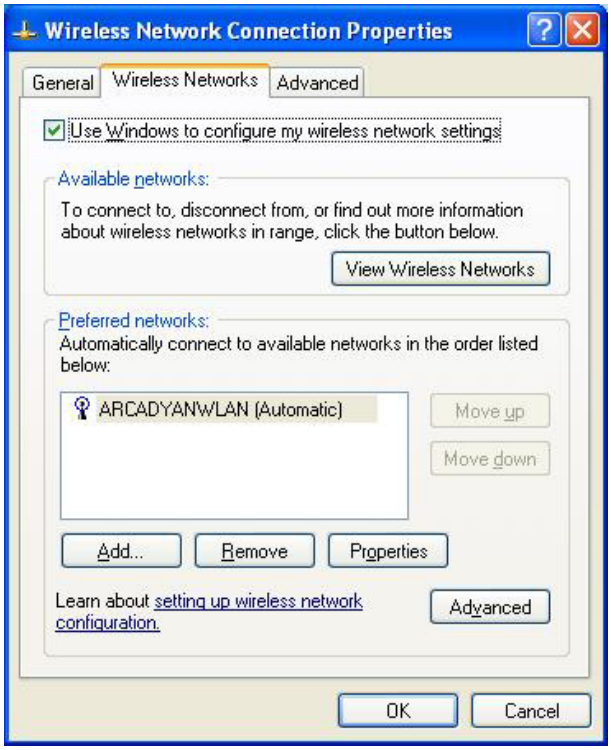

Figure 14: Wireless Network Connection Properties dialog box

2. Select **Add** under the Preferred networks selection box.

The Wireless Network Properties dialog box appears as shown in Figure 15.

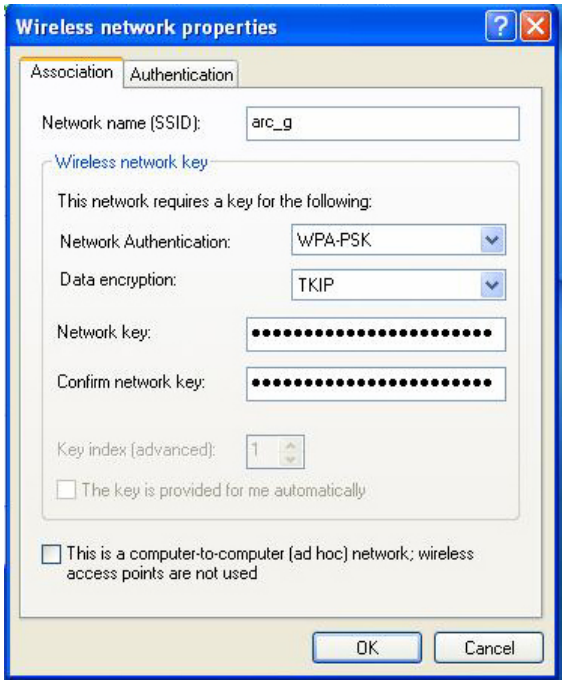

Figure 15: Wireless network properties dialog box

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3. Uncheck the box "The key is provided for me automatically".
4. Verify that the Network Authentication is set to **WPA-PSK**.
5. Verify that the Data Encryption is set to **TKIP**.
6. Input the Network Key of your Access Point, Wireless Broadband Router or Wireless Gateway.

Note: *A 8 – 63 character alphanumeric key-phrase is necessary when using the WPA interface. WPA does not require HEX or ASCII notation common with WEP keys. Your WPA enabled device should already have a 8 – 63 character alphanumeric key-phrase. Consult the information asked for in section 5.2 .*

7. Input the Network Key a second time into the "Confirm network key" box.
8. Select **OK**.

You are returned to the Wireless Network Connection Properties dialog box and are able to verify your connection.

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6 Service Pack 1: Windows® XP Wireless Zero Configuration

This chapter contains information on configuring your HP PC for Station Mode (as a client) if you do not wish to convert to Access Point Mode (AP Mode).

It is necessary to complete the steps in Chapter 2, Antenna Attachment and Chapter 3, Veryfying your Service Pack prior to using Windows® XP Wireless Network Configuration.

Note: *It is assumed that there is an existing wireless network with connection to the internet. If not, please consult your ISP for further information on establishing an internet connection.*

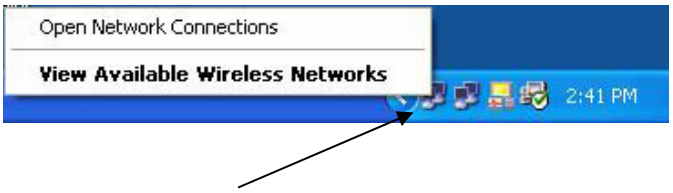
If you have already established a wireless network with access to the internet and you would like to wirelessly connect this HP PC to your wireless network, use **Station Mode**. Due to Windows® XP *Zero Configuration* (Windows® XP Wireless Network Configuration) your HP PC is currently running the SoftAP™ in Station or Client Mode. To continue using your HP PC in Station Mode you will need only to set-up the Network name and network security (Chapter 3).

If your HP PC is connected to the internet and you would like instructions on how to configure for other machines to share the internet connection through this HP PC please refer to Chapter 7, **Activating Access Point Mode,** for information on AP Mode.

6.1 Launching Microsoft® Windows XP Wireless Network Configuration

To launch Windows® XP Wireless Network Configuration:

1. In the Systems Tray find the Wireless Networking icon.



Note: *There may be multiple Network icons in the system tray. Choose the one for Wireless Network Connection as shown.*

Figure 16: Wireless Network icon

2. Select **View Available Wireless Networks** from the Wireless Network icon menu.

The Wireless Network Connection dialog box will appear.

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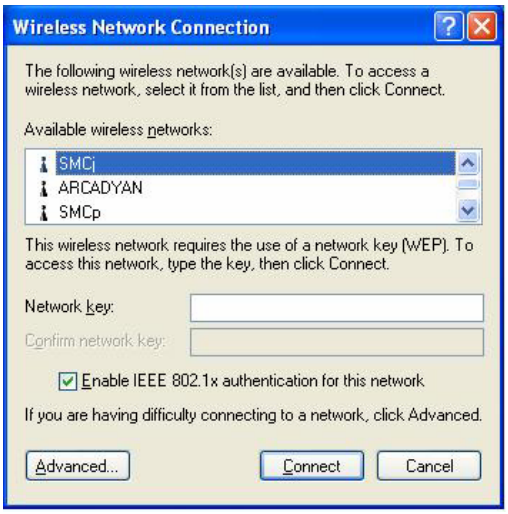
6.2 Setting the Network name and Network Security

Your HP PC is functioning in Station or Client Mode by default. After launching the application (See Section 6.1, Launching the application) you will need to input the Network name and Network Key. The Network name and Network Key must both be set up for your HP PC to function with your current network in Station Mode.

Before setting up the Network name and Network Key on your HP PC you must identify this information on your current wireless network:

- Network name (SSID)
- Security WPA-PSK Key OR Security WEP Key

The Wireless Network Connection dialog box appears when you have launched Windows® XP Wireless Zero Configuration:


Wireless Network Connection
The following wireless network(s) are available. To access a wireless network, select it from the list, and then click Connect.
Available wireless networks:
SMCj
ARCADYAN
SMCp
This wireless network requires the use of a network key (WEP). To access this network, type the key, then click Connect.
Network key:
Confirm network key:
Enable IEEE 802.1x authentication for this network
If you are having difficulty connecting to a network, click Advanced.
Advanced...
Connect
Cancel

Note: *Your Network name will appear in the Available wireless networks box. Any other listed available wireless networks represent the wireless networks established within range of your HP PC. These will vary and do not provide secured access to the internet.*

Figure 17: Wireless Network Connection dialog box

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1. Choose your Wireless Network in the Available wireless networks selection box.
2. Select **Advanced**.

The Wireless Network Connection Properties dialog box appears.

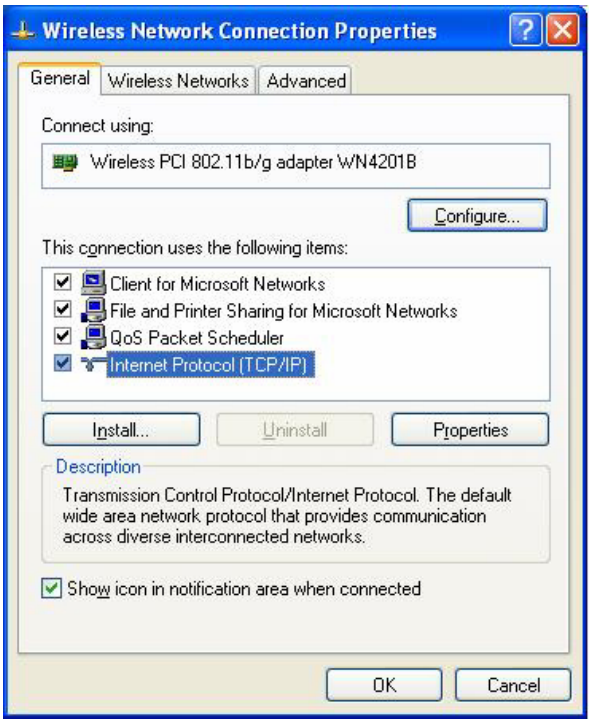

Figure 18: Wireless Network Connection Properties dialog box

3. Select the **General** tab in the Wireless Network Connection Properties dialog box.
4. Highlight **Internet Protocol (TCP/IP)** in the "This connection uses the following items:" selection box.
5. Select **Properties**.

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The Internet Protocol (TCP/IP) Properties dialog box appears with the General tab displayed.

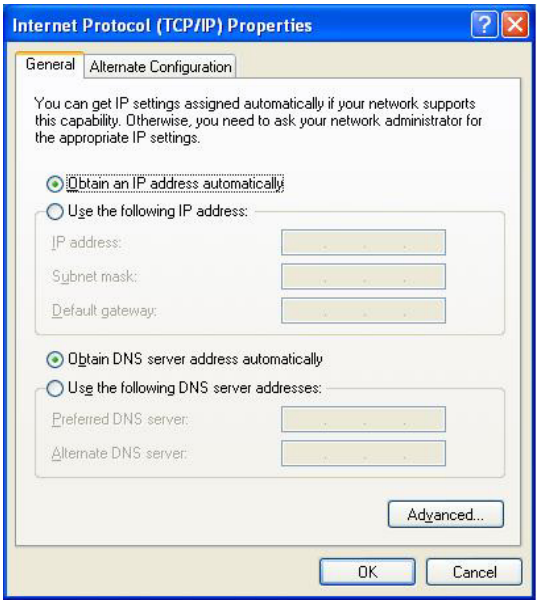
Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Figure 19: Internet Protocol (TCP/IP) Properties dialog box

6. Verify that the following choices are selected:
   - Obtain an IP address automatically
   - Obtain DNS server address automatically

Note: *Obtaining an IP address automatically is recommended. If static IP address settings are preferred, refer to your own wireless network settings.*

7. Select **OK**.

You are returned to the Wireless Network Connection Properties dialog box.

For instructions on how to set WEP security refer to Section 6.2.1. For instructions on how to set WPA security refer to Section 6.2.2.

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6.2.1 WEP: Setting the Network Key (Network Security)

Securing your Software Access Point enabled network is essential in a wireless network environment. Security for the Software Access Point is maintained through the following features:

- Support for WPA (WPA-Personal Security (Wi-Fi protected access) AES and TKIP)
- Support for the WEP (Wired Equivalency Protocol)
- Support for MAC address filtering

This section gives instruction on how to correctly set up WEP security on your HP PC. If you are currently running a WPA enabled device, skip to Section 6.2.2, WPA: Setting the Network Key (Network Security).

In order to set up your Network Key (WEP security feature) you will need to do the following:

1. Open the Wireless Network Connection Properties dialog box:

   - Right click on the Wireless Networks icon in the system tray.
   - Select **View Available Wireless Networks** from the Wireless Networks icon menu.
   - Verify that the wireless network you wish to set up security for is highlighted in the "Available wireless networks" selection box.
   - Select **Advanced.**

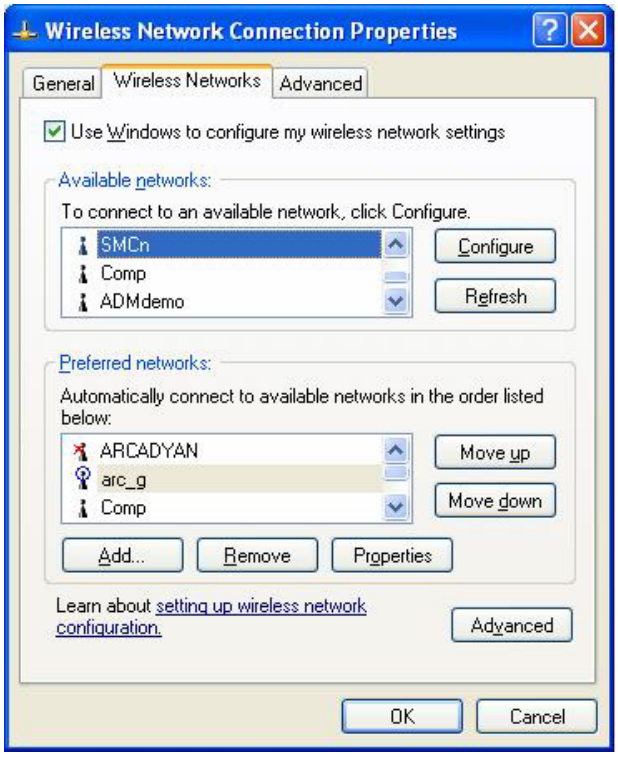

Figure 20: Wireless Network Connection Properties dialog box

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2. Select **Refresh** to the right of the Available networks selection box.
3. Highlight the Network name (SSID) of your Access Point, Wireless Broadband Router or Wireless Gateway in the "Available networks" selection box.
4. Select **Configure**

The Wireless Network Properties dialog box appears.

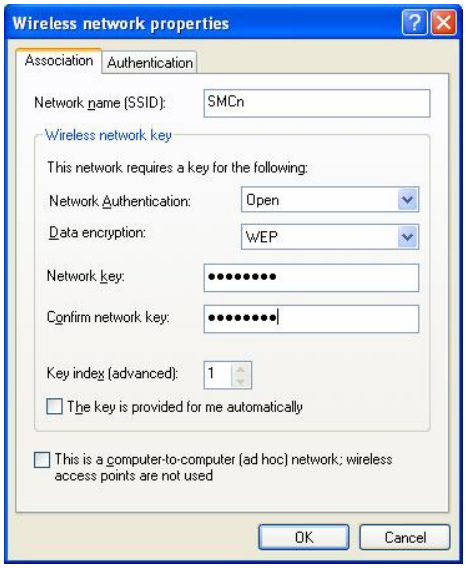

Figure 21: Wireless network properties dialog box

5. Verify that the Network name (SSID) is the same as the one selected in step 3 of this section.
6. Uncheck the box "The key is provided for me automatically".
7. Verify that the Network Authentication is set to **Open**.
8. Verify that the Data Encryption is set to **WEP**.
9. Input the Network Key of your Access Point, Wireless Broadband Router or Wireless Gateway.

Note: *Either a HEX or ASCII format is necessary when using the WEP interface. Your WEP enabled device should already have either HEX or ASCII format pass-phrase associated. Consult the information asked for in section 6.2.*

- *HEX: 10 characters in HEX notation for 40 bit, or 26 characters for 128 bit.*
- *ASCII: 5 characters for 40 bit, 13 characters for 128 bit.*

10. Input the Network Key a second time into the "Confirm network key" box.
11. Select **OK**.

You are returned to the Wireless Network Connection Properties dialog box.

In order to verify your wireless connection see section 6.3, Verifying your Wireless Connection.

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6.2.2 WPA: Setting the Network Key (Network Security)

Securing your Software Access Point enabled network is essential in a wireless network environment. Security for the Software Access Point is maintained through the following features:

- Support for WPA (WPA-Personal Security (Wi-Fi protected access) AES and TKIP)
- Support for the WEP (Wired Equivalency Protocol)
- Support for MAC address filtering

This section gives instruction on how to correctly set up WPA security on your HP PC. If you are currently running a WEP enabled device, return to Section 6.2.1, WEP: Setting the Network Key (Network Security).

In order to set up your Network Key (WPA security feature) you will need to do the following:

1. Open the Wireless Network Connection Properties dialog box:

   - Right click on the Wireless Networks icon in the system tray.
   - Select **View Available Wireless Networks** from the Wireless Networks icon menu.
   - Verify that the wireless network you wish to set up security for is highlighted in the "Available wireless networks" selection box.
   - Select **Advanced.**

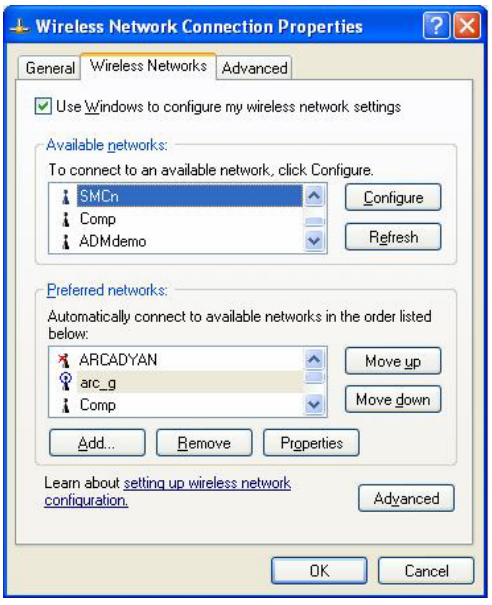

Figure 22: Wireless Network Connection Properties dialog box

2. Select **Refresh** to the right of the Available networks selection box.

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3. Highlight the Network name (SSID) of your Access Point, Wireless Broadband Router or Wireless Gateway in the "Available networks" selection box.

4. Select **Configure**

The Wireless Network Properties dialog box appears.

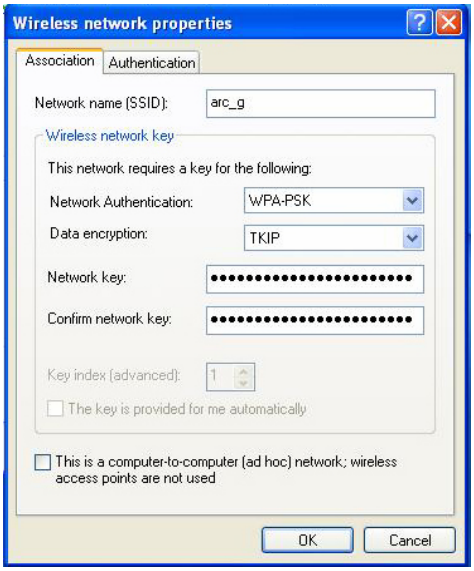

Figure 23: Wireless network properties dialog box

5. Verify that the Network name (SSID) is the same as the one selected in step 3 of this section.
6. Uncheck the box "The key is provided for me automatically".
7. Verify that the Network Authentication is set to **WPA-PSK**.
8. Verify that the Data Encryption is set to **TKIP**.
9. Input the Network Key of your Access Point, Wireless Broadband Router or Wireless Gateway.

Note: *A 8 – 63 character alphanumeric key-phrase is necessary when using the WPA interface. WPA does not require HEX or ASCII notation common with WEP keys. Your WPA enabled device should already have a 8 – 63 character alphanumeric key-phrase. Consult the information asked for in section 6.2.*

10. Input the Network Key a second time into the "Confirm network key" box.
11. Select **OK**.

You are returned to the Wireless Network Connection Properties dialog box.

In order to verify your wireless connection see section 6.3, Verifying your Wireless Connection.

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6.3 Verifying your Wireless Network Connection

Once you have input the Network name and Network Key you should be connected wirelessly in Station Mode, as a Client (See Section 6.2.1 or Section 6.2.2 for further information). It is now possible to verify your wireless connection using the HP PC.

In order to verify your wireless connection:

1. Right click on the Wireless Network Connection icon in the system tray on your desktop.

The Wireless Network Connection Status dialog box appears.

Figure 24: Wireless Network Connection Status dialog box

2. Select the **Support** tab.
3. Verify that the IP address is shown as 192.168.x.x. (eg; 192.168.0.2).

If the information shown verifies a correct IP address and you are still unable to connect to the internet, please consult your ISP.

Note: *If the IP address is shown as 169.254.Y.Y (eg; 169.254.149.168) then the address assigned by your HP PC is not associate with your wireless Access Point, Wireless Broadband Router or Wireless Gateway. Please check the Network name (SSID) and Network Key to ensure that they have been entered correctly. If this information is entered and you are still unable to connect, refer to the Appendix A, Troubleshooting.*

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6.4 Ad-Hoc Network

Ad-hoc networks allow users to create a simple wireless network without the use of an access point. There are several drawbacks when relying on ad-hoc networks for wireless networking. Most notably ad-hoc networks are susceptible to network breakdown due to their decentralized nature.

Please see Microsoft® XP help for further instructions about setting your system up as an ad-hoc network.

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7 Activating Access Point Mode

It is necessary to complete the steps in Chapter 2, Antenna Attachment prior to installing the SoftAP™ to activate Access Point Mode.

Your HP PC, by default, functions in Station Mode (as a Client) which is necessary in situations when there is already a wireless network running. If you would like to establish a wireless network using your HP PC as an Access Point then you will need to install Access Point Mode (AP Mode).

Note: *It is assumed that there is an existing internet connection in order to establish Access Point Mode. Please consult your ISP for further information.*

Before using AP Mode the first time it is necessary to install SoftAP™ on your HP PC. For all future uses of SoftAP™ Mode this is not necessary. If you have already installed the SoftAP™ please see chapter 8, Access Point Mode.

If your HP PC is connected to the internet and you would like instructions on how to wirelessly connect other machines to this HP PC, proceed with this conversion to Access Point Mode.

If another machine is connected to the internet and you would like to wirelessly connect this HP PC to the other connected machine, refer to Chapter 9 on Station Mode.

Warning: *Access Point Mode (AP Mode) may not support the Standby mode on your HP PC. It is highly recommended that you change the power scheme to "always on" when the Software Access Point is enabled.*

In order to change the power scheme to "Always on":

1. Right click on your desktop.
2. Select **Properties**.

   The Display Properties dialog box appears.
3. Select the tab labeled **Screensaver**.
4. Select the button labeled **Power**.
5. Select **Never** in the drop box next to System standby.
6. Select **Apply**.
7. Select **OK**.

   You will be returned to the Display Properties dialog box.
8. Select **OK**.

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7.1 Installation

In order to install the SoftAP™ (first use only. For future uses see Chapter 8, Access Point Mode). Refer to the Figure below:

1. Go to the **Start** menu on your desktop
2. Select **All Programs**

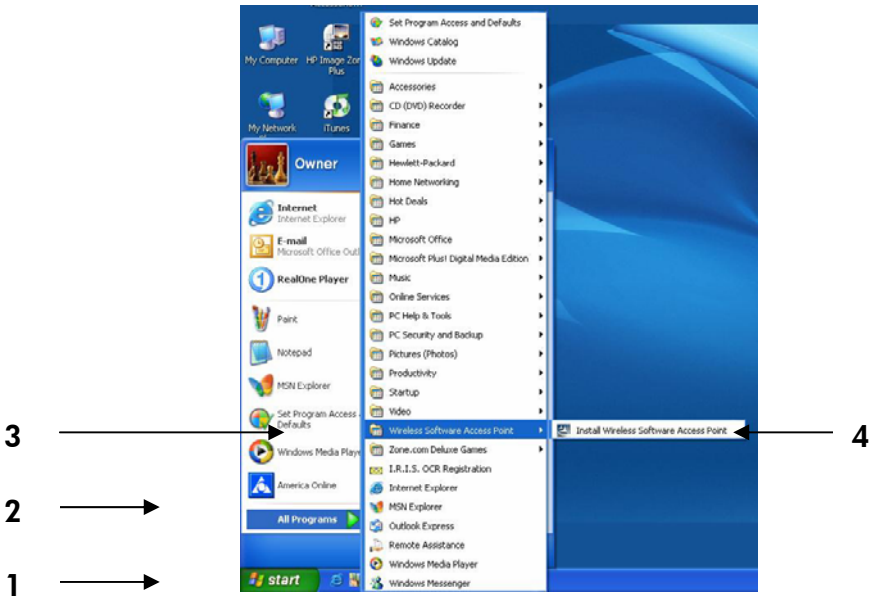

Figure 25: Conversion to Access Point Mode

3. Select **Wireless Software Access Point**
4. Select **Install Wireless Software Access Point**

The Software Access Point will activate on your HP PC with assistance from the InstallShield Wizard.

No action is required through this process.

Warning: *Interruption of the activation process may result in the inability of the SoftAP™ to function.*

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The InstallShield Wizard will display several screens during self-installation:

Note: *No action is required during the installation process. This process may take a few moments to complete.*

The InstallShield Wizard prepares to install……

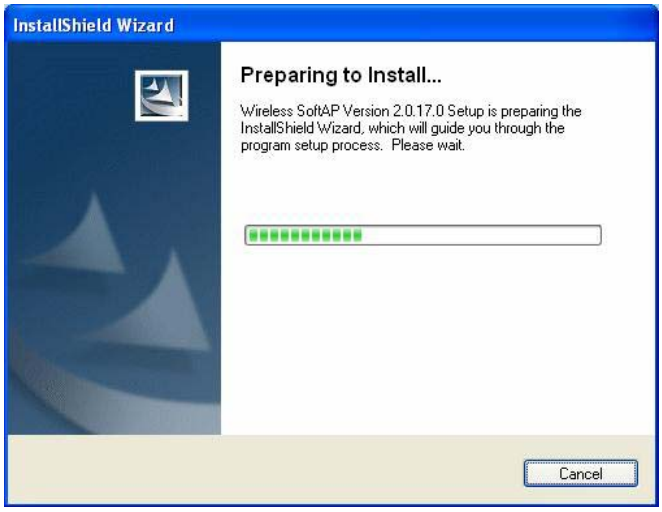
InstallShield Wizard
Preparing to Install...
Wireless SoftAP Version 2.0.17.0 Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.
Cancel

Figure 26: Preparing to Install

When the installation through InstallShield Wizard is complete you should see the wireless SoftAP™ icon in the system tray of your HP PC as shown.

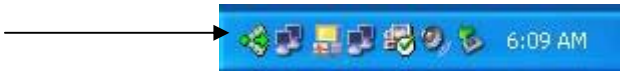

Figure 27: Wireless SoftAP™ icon

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7.2 Verifying your Wireless Network Connection

After completing the software activation for conversion into Access Point Mode there will be an additional icon in the system tray of your HP PC. This icon will remain present now that the SoftAP™ has been installed.

The SoftAP™ icon is a green pie-shaped icon with an arrow in the center.

Figure 28: Software Access Point icon

When the arrow in the center of the Software Access Point icon is pointing in the right hand direction your HP PC is functioning in Access Point Mode. When the arrow is pointing in the left hand direction, your HP PC is functioning in Station Mode (Client Mode).

When the pointer is first rolled over the Software Access Point icon after AP activation the message shown in figure 28 will appear. The Wireless SoftAP™ icon shown in figure 28 above is not connected as there are zero clients associated.

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8 Access Point Mode

Prior to using your HP PC in Access Point Mode you must attach the antenna (See Chapter 2). It is also necessary to convert to Access Point Mode (See Chapter 7) as the HP PC functions in Station Mode by default.

If another machine is connected to the internet and you would like to wirelessly connect this HP PC to the other connected machine, refer to Chapter 9 on Station Mode.

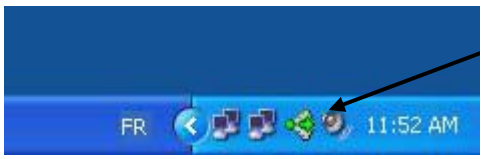
Note: *It is assumed that there is an existing internet connection in order to establish Access Point Mode. Please consult your ISP for further information.*

Warning: *Software Access Point Mode may not support Standby mode on your HP PC. It is highly recommended that you change the power scheme to "always on" when the Software Access Point is enabled. Please refer to Microsoft ®XP help for further information.*

8.1 Launching the SoftAP™

There are two ways to launch the Software Access Point: Through the SoftAP™ icon in the system tray of your desktop or through the SoftAP™ icon menu. Either method will bring up the Wireless SoftAP™ dialog box.

To launch the Software Access Point by using the icon in the System Tray simply left click the icon once.



Software Access Point System Tray icon.

The arrow in the center is pointing to the right indicating that Access Point Mode is active.

Figure 29: Launching; Software Access Point icon

OR

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It is possible to launch the SoftAP™ with a right click on the SoftAP™ icon. When a right click is made on the icon the SoftAP™ icon menu appears. Select **Show** from this menu to bring up the Wireless SoftAP™ dialog box.

Figure 30: Launching; Software Access Point icon menu

The Wireless SoftAP™ dialog box appears as shown in figure 31.

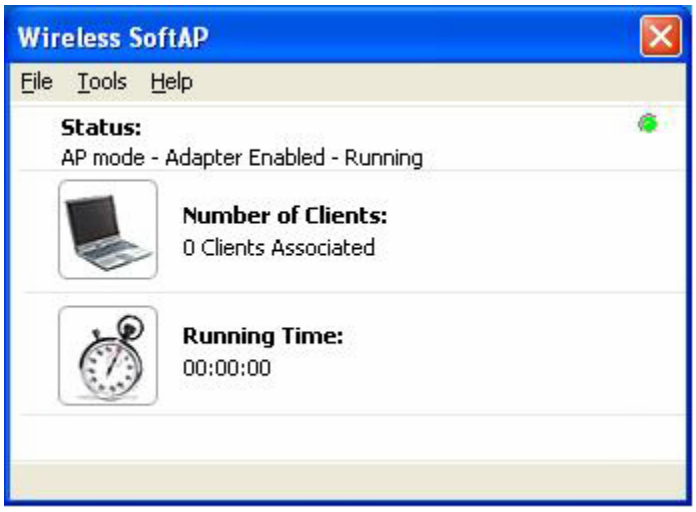

Figure 31: Wireless SoftAP™ dialog box

For a detailed explanation of the Wireless SoftAP™ dialog box refer to Section 8.2.

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8.2 The Wireless SoftAP™ Dialog Box

The Wireless SoftAP™ dialog box as shown in figure 32, is the primary hub of the SoftAP™ . From this box all of the major functions (security, device viewing and mode switching) can be accomplished.

Figure 32 represents the Wireless SoftAP™ dialog box when AP Mode is active. For information on the Wireless SoftAP™ dialog box when Station Mode is active see section 9.2.

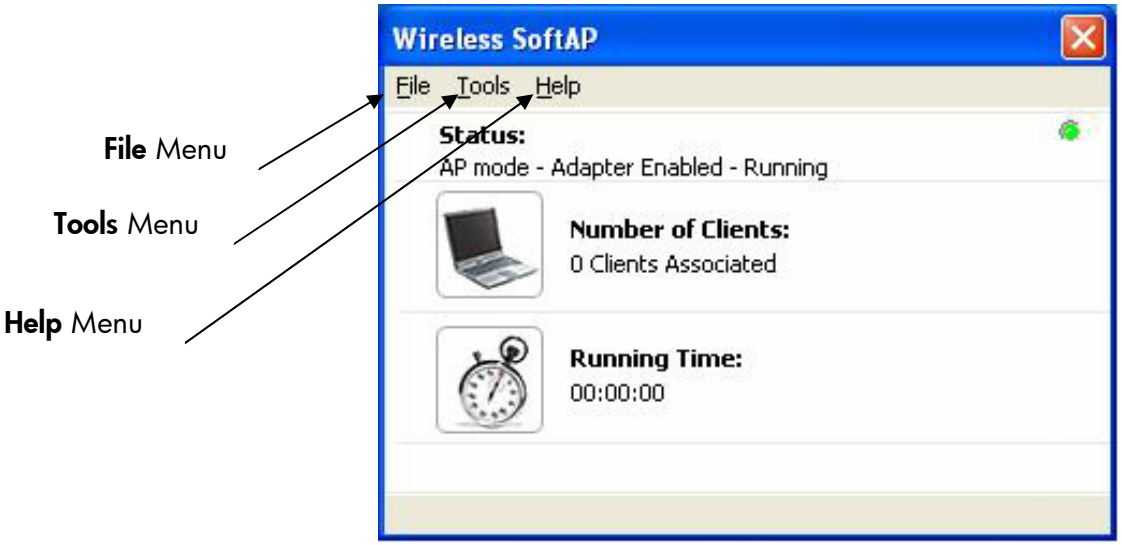

Figure 32: Wireless SoftAP™ menus

The Wireless SoftAP™ dialog box consists of three drop-down menus: **File**, **Tools** and **Help**.

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8.2.1 File Menu

Figure 33: Wireless SoftAP™ File menu

There are two **File** menu choices:

- **Minimize to System Tray** (section 8.2.1.1)
- **Exit** (section 8.2.1.2)

8.2.1.1 Minimize to System Tray

minimizes the Wireless SoftAP™ dialog box to the SoftAP™ icon in your system tray. It is necessary to open it again when desired by clicking the icon.

8.2.1.2 Exit

Exits you from the SoftAP™ application altogether. The SoftAP™ icon will no longer be present in the system tray of your HP PC and you will need to reboot the HP PC in order to regain the icon.

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8.2.2 Tools Menu

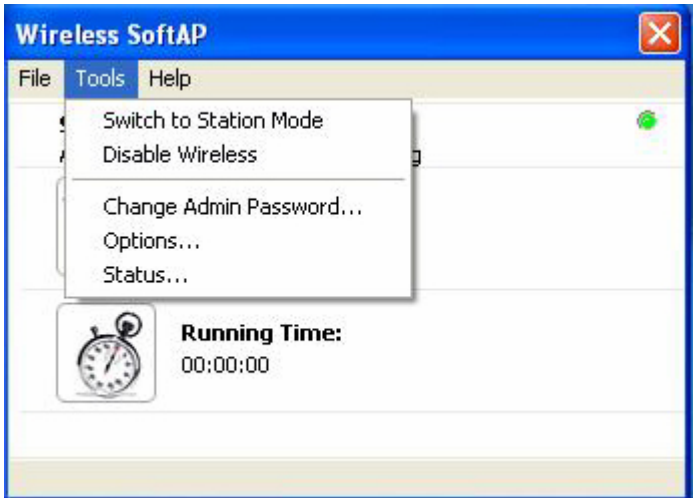

Figure 34: AP Mode Tools menu

There are five **Tools** menu choices:

- **Switch to Station Mode** (Section 8.2.2.1)
- **Disable Wireless** (Section 8.2.2.2)
- **Change Admin Password….** (Section 8.2.2.3)
- **Options….** (Section 8.2.2.4)
- **Status….** (Section 8.2.2.5)

8.2.2.1 Switch to Station Mode

Switching to Station Mode is necessary when there is already an Access Point, gateway, or wireless broadband router and you wish to connect this HP PC to the other machine. If circumstances change and it becomes necessary to use your HP PC in Station Mode (as a client) after converting to Access Point Mode this can be easily achieved by selecting the Wireless SoftAP™ Tools menu selection **Switch to Station Mode.**

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Note: *Any settings applied to Station Mode in Windows® XP Wireless Zero Configuration will remain in effect when Station Mode is applied.*

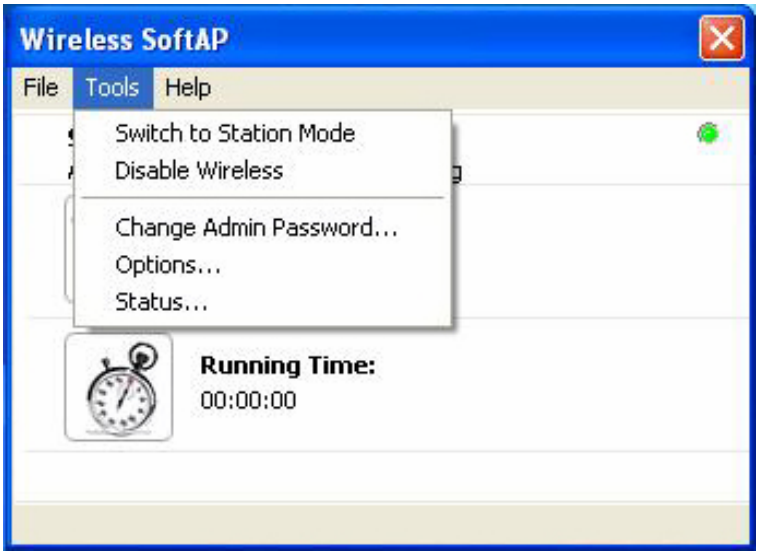

Figure 35: AP Mode Tools menu

Once **Switch to Station Mode** has been selected from the Tools menu the following screens will appear while the Wireless SoftAP™ initiates changes in your Wireless connection settings:

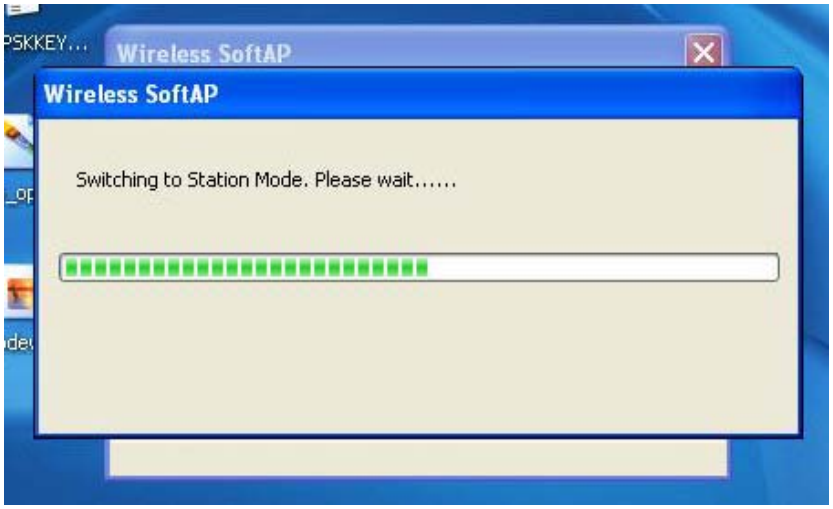

Figure 36: Switch to Station Mode

As your HP PC switches wireless connection settings you will be asked to wait (See figure 36 above).

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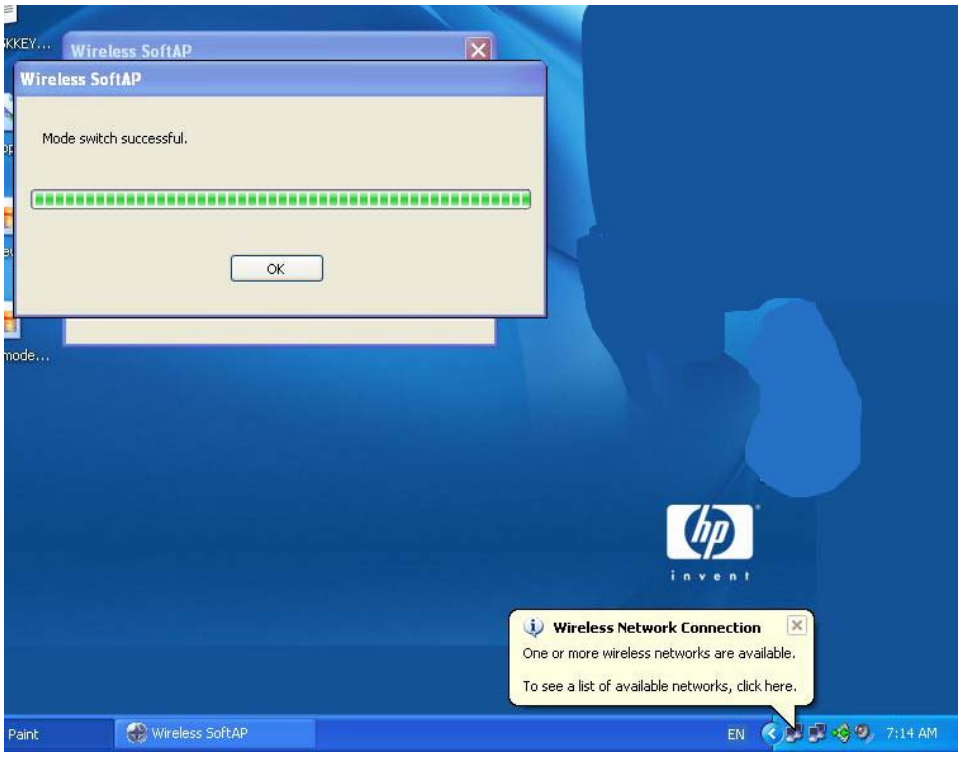

Figure 37: Station Mode switch successful

You will be prompted to select **OK** when the switch to Station Mode is complete.

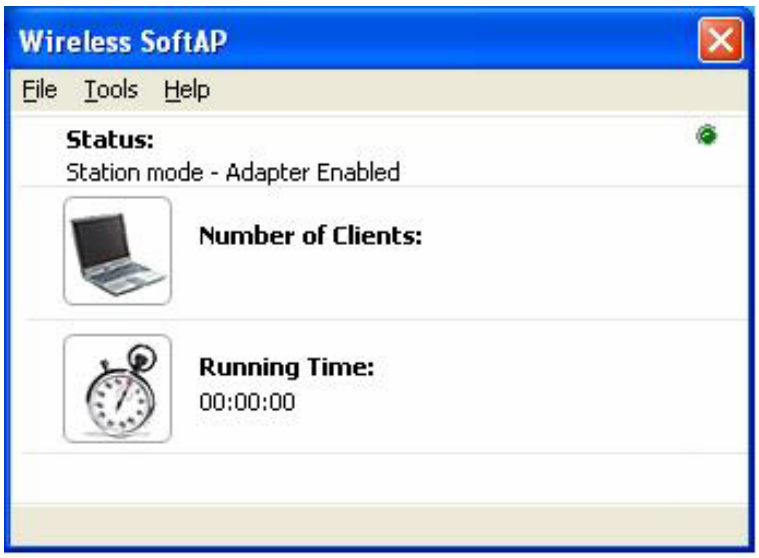

Figure 38: SoftAP™ in Station Mode

Once the Wireless SoftAP™ has finished switching to Station Mode the status will read "Station mode – Adapter Enabled" and no text will appear under "Number of Clients" as shown in figure 38).

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Important
The most recent Station Mode settings entered either in Windows® XP Wireless Zero Configuration or in Chapter 9, Station Mode, will be enabled. If you have not entered settings for Station Mode, refer to Chapter 3.

8.2.2.2 Disable / Enable Wireless

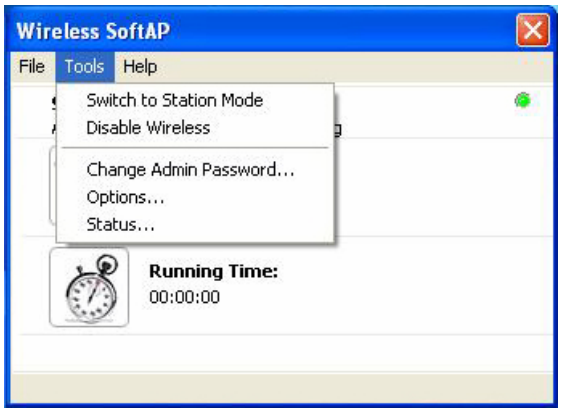

Figure 39: Wireless SoftAP™ dialog box. Tools menu

From the Tools menu it is possible to disable the Wireless SoftAP™ by selecting **Disable Wireless** (See figure 39). Once disabled the Wireless SoftAP™ dialog box will display "AP mode – Adapter Disabled" under Status as shown in figure 40 below.

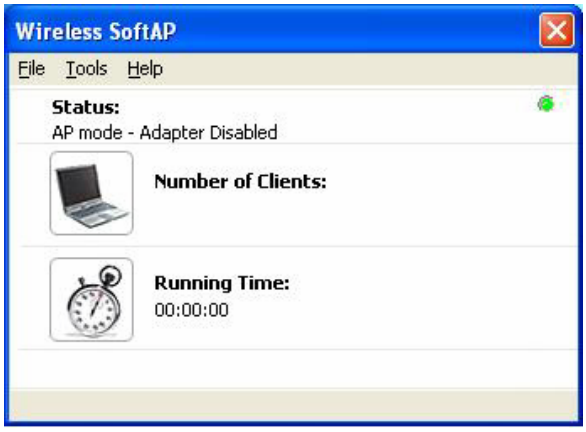

Figure 40: Wireless SoftAP™ dialog box; Wireless Disabled

Note: *When wireless is disabled on your HP PC wireless connections will not be functioning nor can they be established. Wireless must be enabled again in order to connect with other wireless devices or to re-establish pre-set wireless connections.*

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Once disabled your Wireless LAN 802.11b/g Device can be re-activated through use of the same menu as seen in Figure 41 below.

Figure 41: Tools menu; Enable Wireless

In order to enable the Wireless LAN 802.11b/g Device to begin functioning again select **Enable Wireless** from the Tools menu (figure 41).

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8.2.2.3 Change Admin Password…

SoftAP™ allows setting of an Admin password through the Tools menu as shown in figure 42 below.

By setting the Admin password any settings saved in the Tools menu under the options selection become locked. It is necessary to enter the specified password in order to go to the options selection in the Tools menu.

Note: *It is not necessary to enter the Admin Password to view Status or to change from AP Mode to Station Mode.*

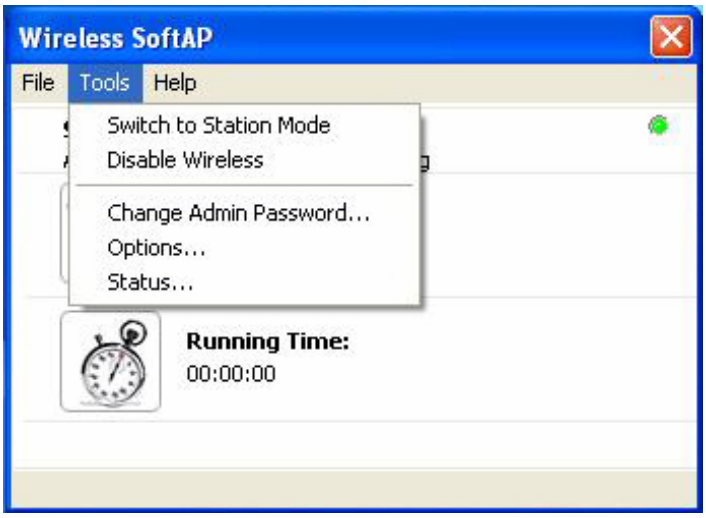

Figure 42: Tools menu; Change Admin Password…

Important
If you loose your Admin Password refer to Appendix A: Troubleshooting.

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Figure 43: Change Password dialog box

In order to set an Admin Password:

1. Leave the space for Current Password empty if you have not already set an admin password.

Note: *The Admin Password must be 8 – 16 alphanumeric characters.*

2. Enter the desired password into the space for New Password.
3. Enter the desired password a second time into the space for Confirm New Password.
4. Select **OK**.

The Admin Password dialog box will disappear.

5. Exit the Wireless SoftAP™ application (See section 8.2.1.2)
6. Re-start your HP PC. (This is necessary for the admin password to take effect.)

Note: *The admin password will not effect Station Mode as Options is not an available menu selection while running in Station Mode.*

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After completing steps 1 – 5 above you will be prompted to enter your password when attempting to access Options in the Tools menu.

Figure 44: Prompt dialog box for Admin Password

After entering the password and selecting **OK**, Options on the Tools menu will be available in Access Point Mode.

8.2.2.4 Options…

The Options menu selection allows you to alter regional settings for the SoftAP™ , establish security settings and set up MAC Filtering.

Figure 45: Tools menu; Options Selection

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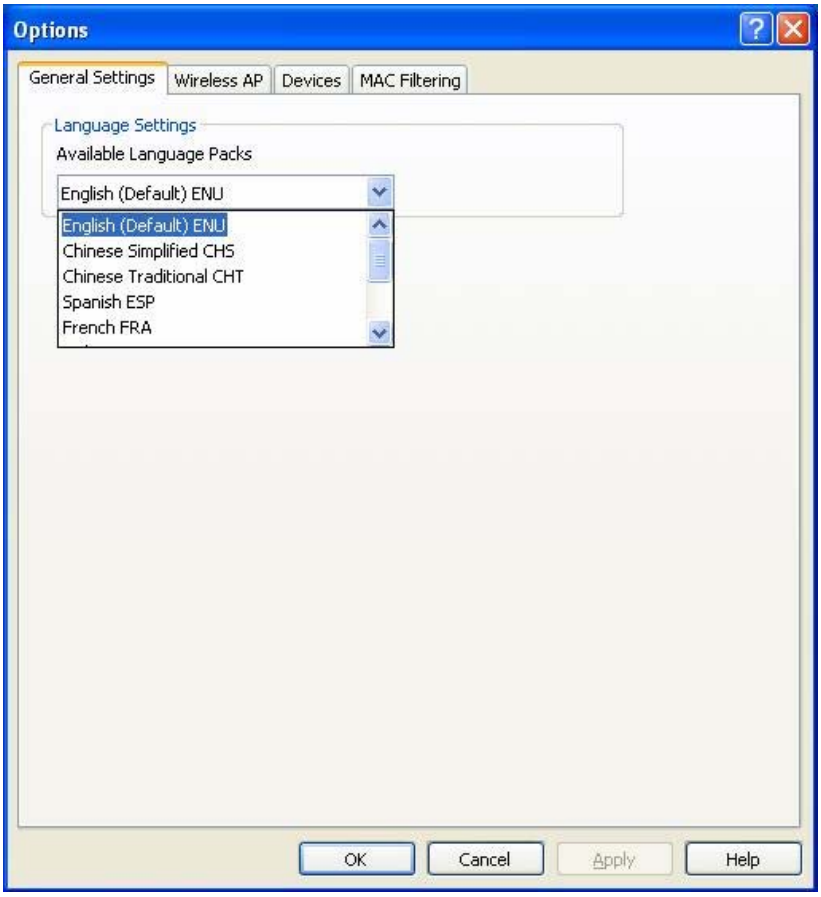

Figure 46: Options; General Settings tab

The General tab displays the available language packs. By default the language should be set to the region representing the location where the HP PC was purchased, yet it is easy to select another language by selecting the down arrow and highlighting the chosen language.

Note: *The language settings effect only the SoftAP™ interface and are not applicable to your Microsoft® operating system.*

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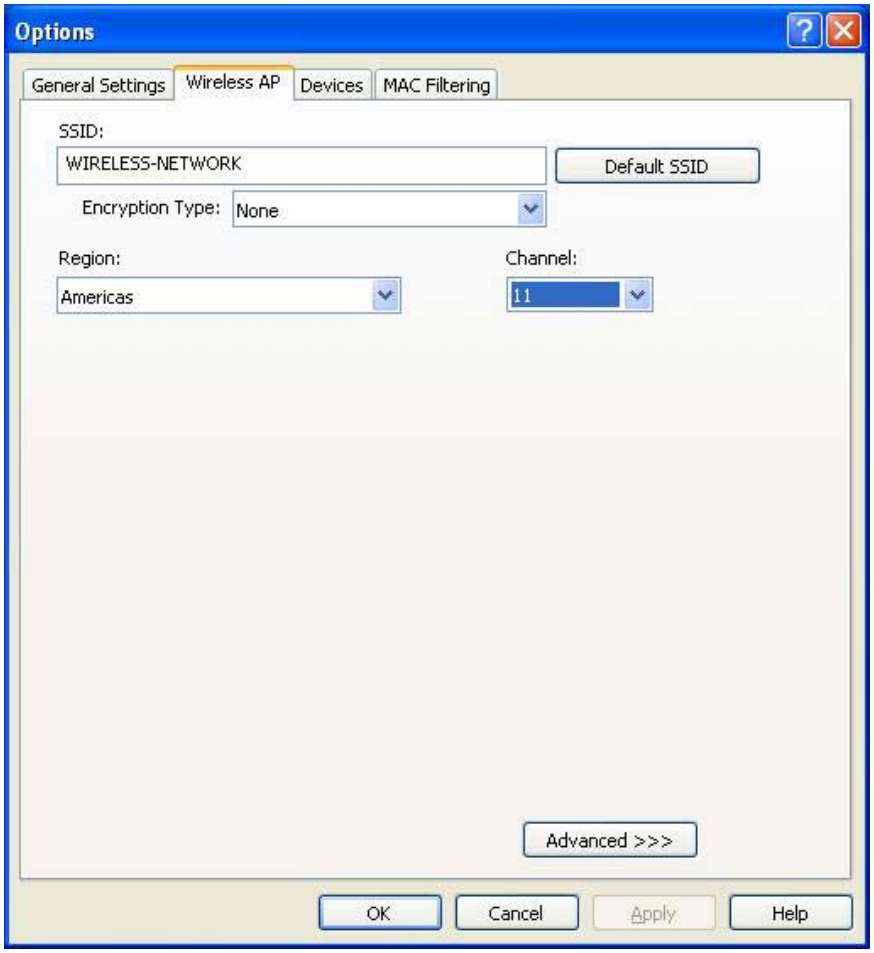

Figure 47: Options; Wireless AP tab

The Wireless AP tab, as shown above in figure 47, provides the SSID (Network name) of your HP PC along with the Encryption type, Region, and Channel. There is also an Advanced selection available at the bottom of the dialog box which makes more advanced functions available.

The **SSID** (Network name) of your HP PC is the name that other wireless 802.11b/g devices see when they discover your HP PC. The SSID can be changed to one of your choosing or can be left as the default name; WIRELESS-NETWORK.

Encryption Type refers to the type of security you wish to set up on your HP PC. Once a type of security is selected you will be asked to enter applicable security key. Refer to figure 48 to view the security options available.

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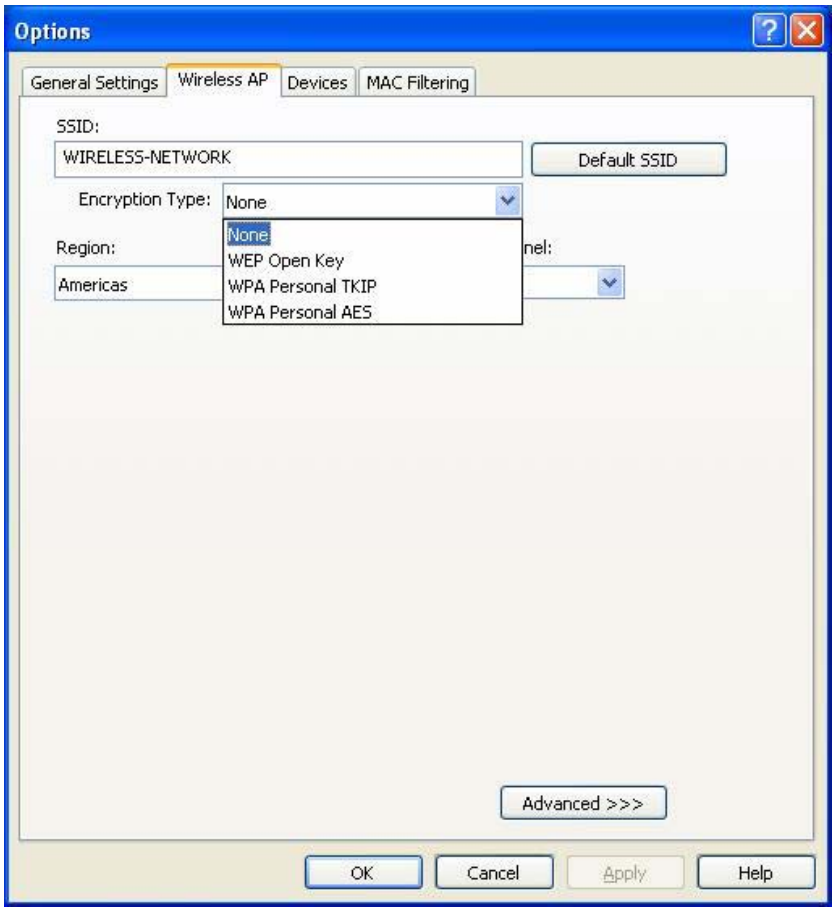

Figure 48: Types of Security

There are three types of security available for use with the SoftAP™ : **WEP Open Key**, **WPA Personal TKIP** and **WPA Personal AES**.

It is important to set up matching security types between 802.11 devices. It is necessary to check the type of security on your other wireless network prior to establishing security on your HP PC. Instructions for setting security for AP Mode are located in section 8.3.

WEP (Wired Equivalency Protocol): Open Key is an encryption standard for 802.11 devices that provides security for wireless LANs. The "key" used is the "password" should be the same for all 802.11b/g devices you wish to connect, including your HP PC.

If you are choosing a WEP security key it is necessary to enter:

1. **ASCII** (allows letters ranging from a – z and numbers from 0 – 9)
    - 5 characters for 40 bit encryption
    - 13 characters for 128 bit encryption (stronger form of security)

2. **HEX** (allows letters ranging from a – f and numbers from 0 – 9)
    - 10 characters for 40 bit encryption
    - 26 characters for 128 bit encryption (stronger form of security)

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WPA Personal TKIP (Temporal Key Integrity Protocol) and **WPA Personal AES** (Advanced Encryption Standard):

Note: *WPA security can either be "WPA Personal TKIP" or "WPA Personal AES". There is no noticeable difference between these types of WPA nor is there a difference when establishing either in the SoftAP™ . It is only necessary to ensure WPA TKIP and AES compliance with the other 802.11b/g devices you are connecting if you wish to set up WPA security. If your other 802.11b/g devices do not list either TKIP or AES they are most likely compliant with both.*

WPA (Wi-Fi Protected Access) is a more recent encryption standard for 802.11 devices providing security for wireless LANs. The "key" used for WPA, like that used in WEP, is the "password" and should be the same for all 802.11b/g devices you wish to connect, including your HP PC.

Since WPA is a more recent standard all 802.11 devices may not have the option to use WPA security. It will be necessary to use WEP Open Key on your HP PC if this is the case.

If you are choosing a WPA security key:

3. **ASCII** (allows letters ranging from a – z and numbers from 0 – 9)
    - 8 characters for 40 bit encryption
    - 63 characters for 128 bit encryption (stronger form of security)

4. **HEX** (allows letters ranging from a – f and numbers from 0 – 9)
    - 64 characters for 40 bit encryption

Region (See figure 49) refers to the geographic region where you are currently using your HP PC. By default this should be set to your local region.

Regional settings are required in order for your HP PC to operate on channels in accordance to regional regulations and specifications of use required by law. The regional settings should not be altered unless your HP PC has been relocated to another region listed.

Note: Altering the region without physically locating your HP PC in the selected region may effect the performance of your wireless LAN 802.11b/g device as the available channels per region differ.

Channel (See figure 49) refers to the wireless channel used to communicate with access points / gateways / clients (wireless networks). By default this is set to your local regional requirements.

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Advanced (See figure 49): refers to the settings button available at the bottom of the dialog box. The advanced settings are primarily used for network engineers or expert users.

Warning: *The Advanced options are for network qualified users only. Adjustments made could adversely affect your wireless network performance.*

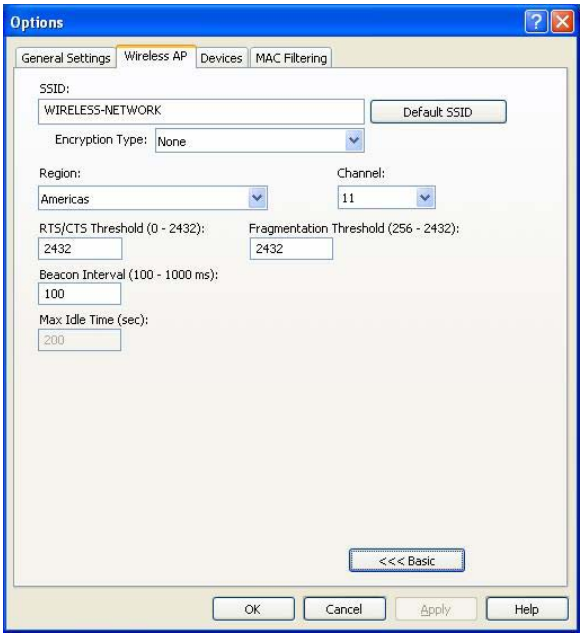

Figure 49: Advanced Wireless AP tab

When Advanced is selected (See figure 49) the advanced settings show and the button reads **Basic**. Select the **Basic** button in order to restore the basic settings view of the Wireless AP tab.

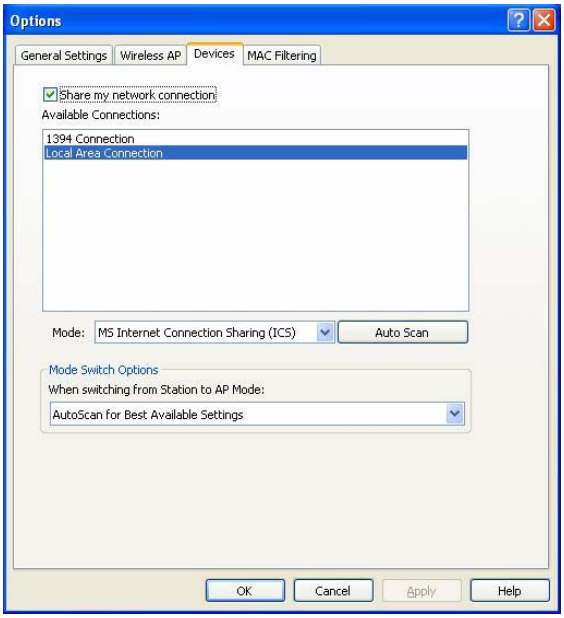

Figure 50: Options; Devices tab

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The Devices tab as shown in figure 50 is an advanced feature allowing modification of the SoftAP™ due to changing network conditions.

The Wireless LAN 802.11b/g Device was automatically configured based on current network conditions during set up of your HP PC and should not require changing.

Share My Network Connection, as shown in figure 50, allows your HP PC to share the network connection wirelessly with other 802.11b/g devices. By default this box should be checked.

Available Connections (see figure 50**)** shows the available connections on your HP PC.

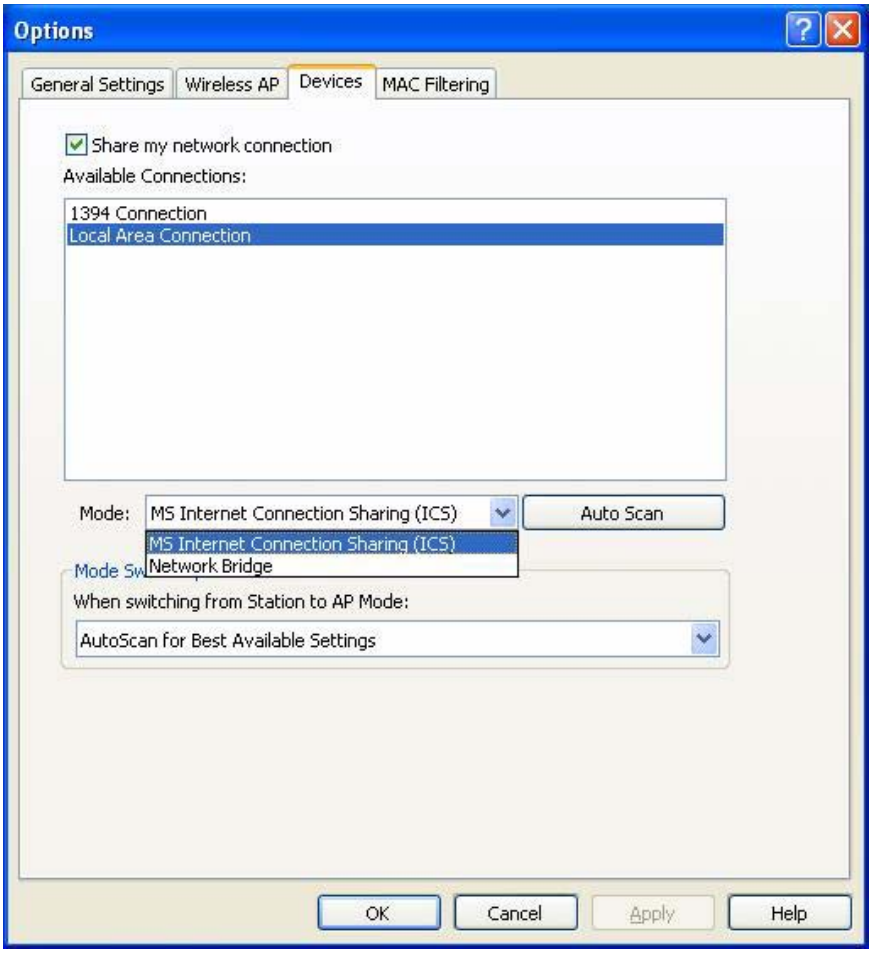

Figure 51: Microsoft® Modes

Mode (see figure 51**)** displays the current Microsoft® Mode. There are two Microsoft® modes available: MS Internet Connection Sharing (ICS) mode and Network Bridge mode.

MS ICS (Microsoft® Internet Connection Sharing) mode provides wireless connectivity to SoftAP™ clients and Internet Connection Sharing to an existing LAN through the SoftAP™ hosts LAN adapter. When MS ICS mode is selected, SoftAP™ clients are leased IP addresses using DHCP

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services from the SoftAP™ host (your HP PC). The range of IP addresses assigned to clients in this mode are 192.168.0.2. – 192.168.0.253.

MS ICS mode should be used when you have been provided a single IP address from an Internet Service Provider (contact your ISP for further information) and multiple computers need to share a single network connection through the ISP. The maximum number of concurrent users in MS ICS mode when using the SoftAP™ is 10.

The SoftAP™ will provide wireless AP functionality, DHCP service, and NAT services to SoftAP™ clients when MS ICS is the chosen mode.

Network Bridge mode **(**see figure 51**)** bridges existing LAN segment(s). Typically a bridge is used to interconnect LAN segments on a network that already provides DHCP and routing services. The SoftAP™ should be configured in Network Bridge mode if the LAN or any LAN segment other than this HP PC uses DHCP. The maximum number of concurrent users in Network Bridge mode when using the SoftAP™ is 254.

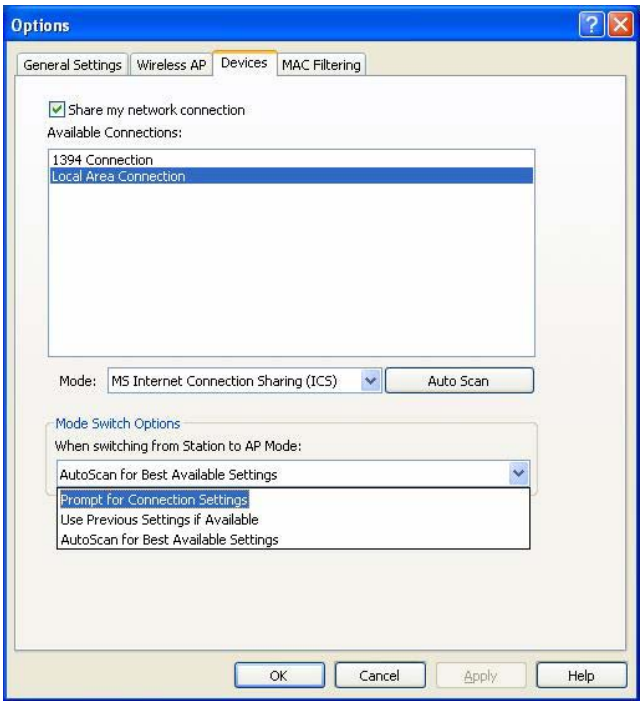

Figure 52: Mode Switch selections

Auto Scan (see figure 52**)** scans your system by default and locates the best wireless LAN connections for best network performance.

Mode Switch Options (see figure 52**)** allows three methods for automatically selecting wireless devices / networks to connect with when you switch between AP Mode and Station Mode or vice versa:

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- Prompt for Connection Settings
- Use Previous Settings if Available
- AutoScan for Best Available Settings

Selecting "Prompt for Connection Settings" ensures that the settings you have chosen will be the ones connected with your HP PC. "Use Previous Settings if Available" will cause your HP PC to attempt connecting to the previously set devices and "AutoScan for Best Available Settings" will scan for the best configuration.

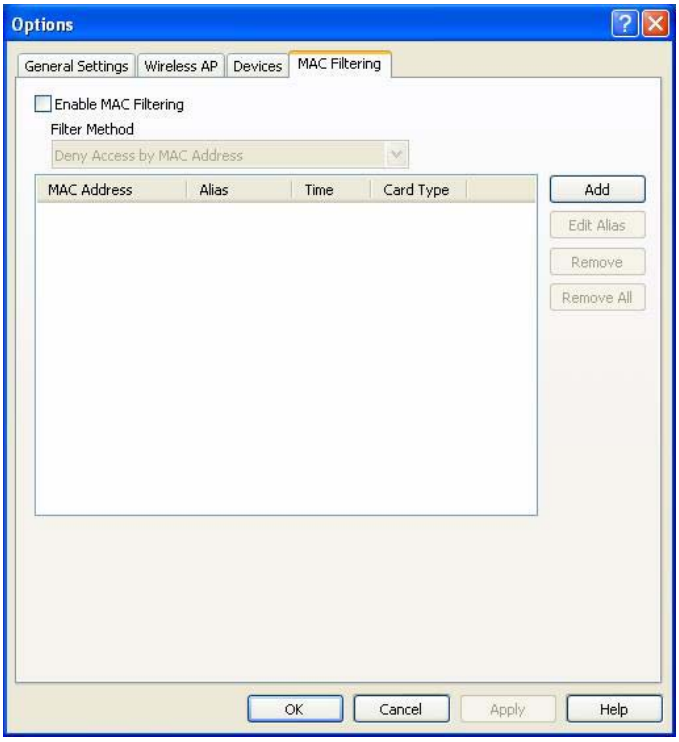

Figure 53: Options; MAC Filtering tab

The MAC address is used by networks for associating an IP address to your HP PC or other wireless devices. Every piece of hardware on a network has a MAC address. Because each MAC address is unique, it is suitable to use a MAC address for filtering purposes.

The **MAC Filtering tab** allows the capability to explicitly allow or deny a client device access to your computer through SoftAP™ wireless connection. This is a security feature used to ensure that your network remains inaccessible to unknown or unwanted devices.

When the "Enable MAC Filtering" box is checked it is possible to choose either "Allow Access by MAC Address" or "Deny Access by MAC Address" as shown in figure 54.

Note: *If you have chosen to deny access to a MAC address or have not allowed access from a specific MAC address then that device will not be allowed connection to your HP PC, even with a correct security key.*

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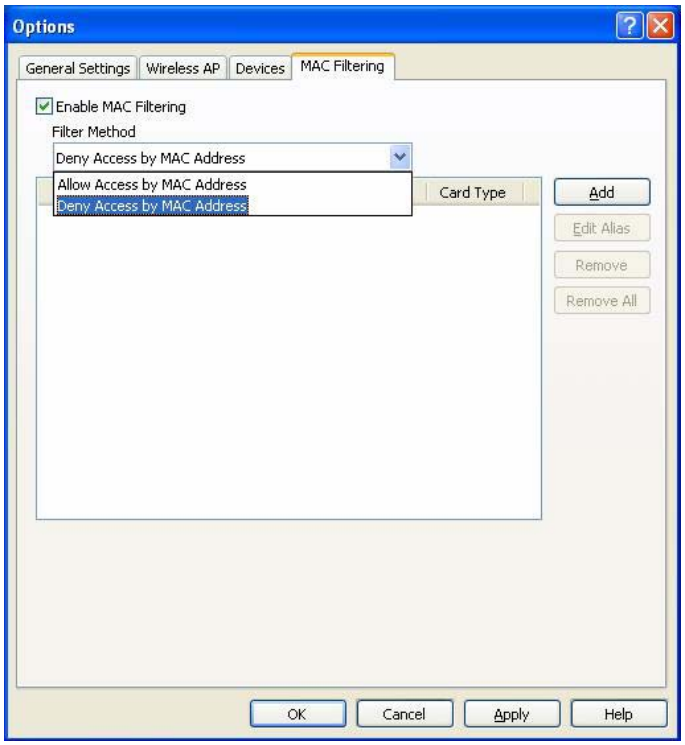

Figure 54: MAC Filtering Enabled

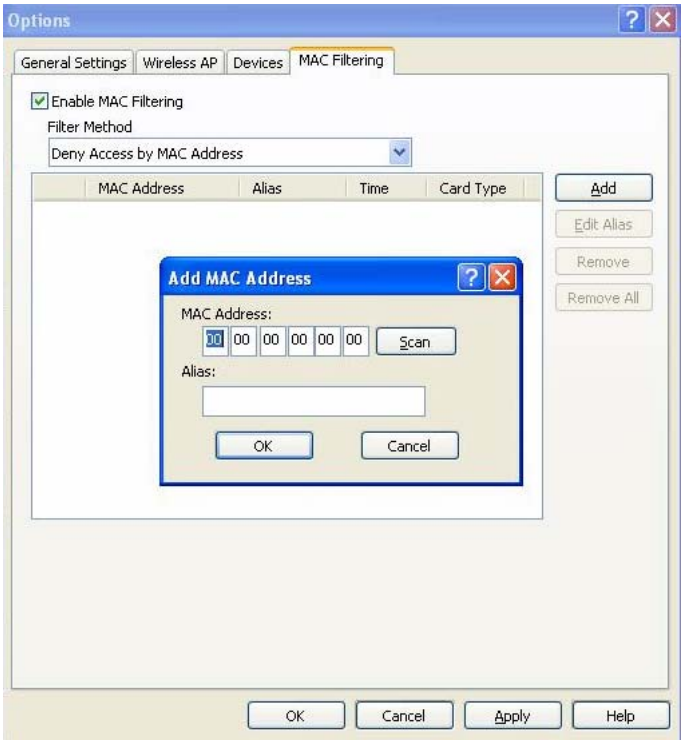

Figure 55: MAC Address input

To enable MAC Filtering and select addresses for entry:

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1. Check the box at **Enable MAC Filtering**
2. Choose the desired Filter Method (either "Deny Access by MAC Address" or "Allow Access by MAC Address"
3. Select **Add**

The Add MAC Address dialog box appears as seen in figure 55.

4. Enter a known MAC address in the spaces provide or select "Scan" to scan the area for currently connected device MAC addresses.
5. Use the Alias box to add a name that you are able to remember to the MAC Addresses selected if desired.

Note: *Adding an alias to a MAC address makes users easier to identify when viewing the connected station list.*

6. Select **OK** on the MAC Address dialog box.

The Add MAC Address dialog box will disappear.

7. Select **Apply** on the MAC Filtering tab.

8.2.2.5 Status…

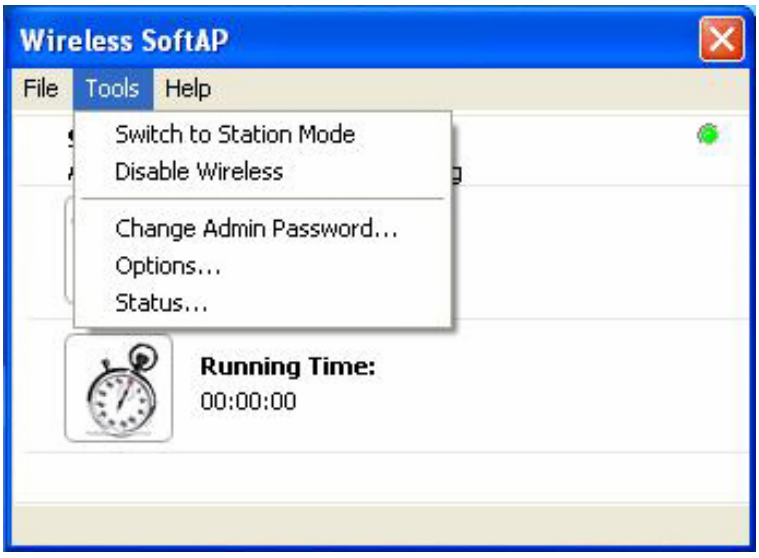

Figure 56: Tools menu; Status….

Select **Status** from the Options menu to display status of the SoftAP™ , Devices and Stations.

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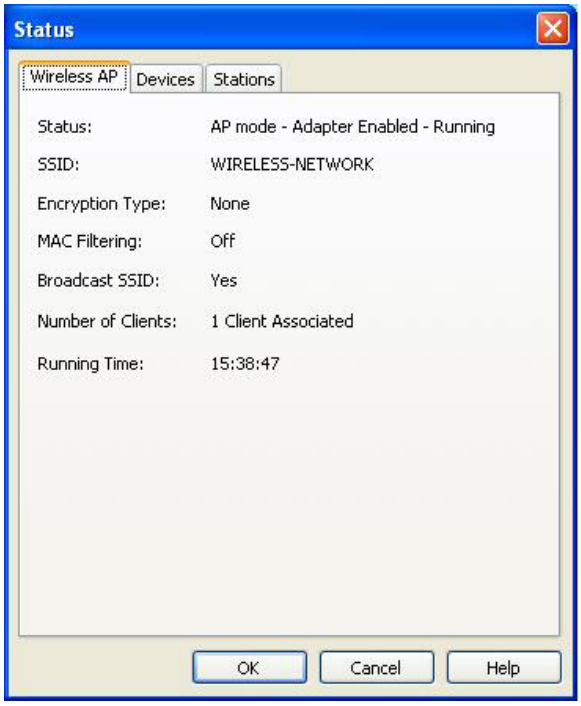

Figure 57: Status of Wireless AP

The **Wireless AP** tab is displayed when Status is selected in the Tools menu. The Wireless AP tab shown in figure 57 shows the following:

- **Status**: The SoftAP™ is enabled and running in Access Point Mode
- **SSID**: The SSID has been left at default (WIRELESS-NETWORK)
- **Encryption Type**: No security has been set up between the two wirelessly connected devices

Note: *It is not recommended to connect wireless devices of any kind without establishing security settings. See section 8.3 for instructions on how to establish either WEP or WPA security while in AP Mode.*

- **MAC Filtering**: MAC Filtering has not been established
- **Broadcast SSID**: The HP PC is broadcasting the SSID (other devices are able to view this HP PC when they search for Wireless LAN 802.11b/g Devices)
- **Number of Clients**: There is one client associated (connected) to this HP PC
- **Running Time**: Time Connected

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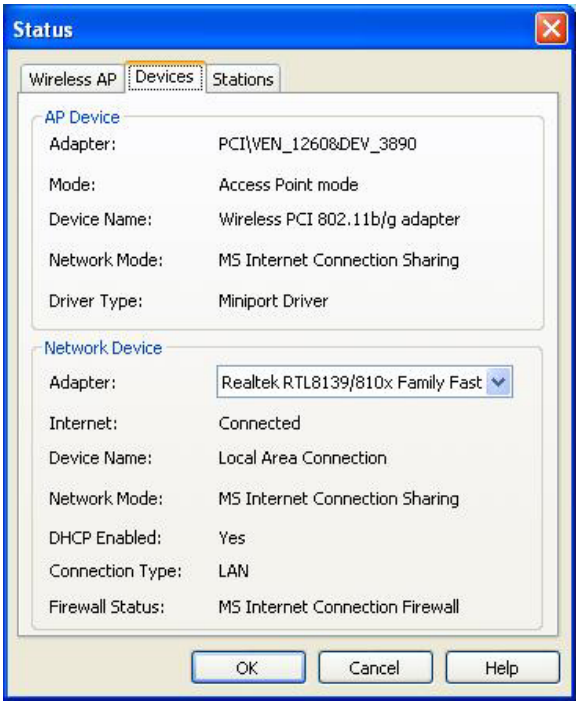

Figure 58: Status of Devices

Select the Devices tab to display Device status. The **Devices** tab shown in figure 58 shows properties of the network configuration.

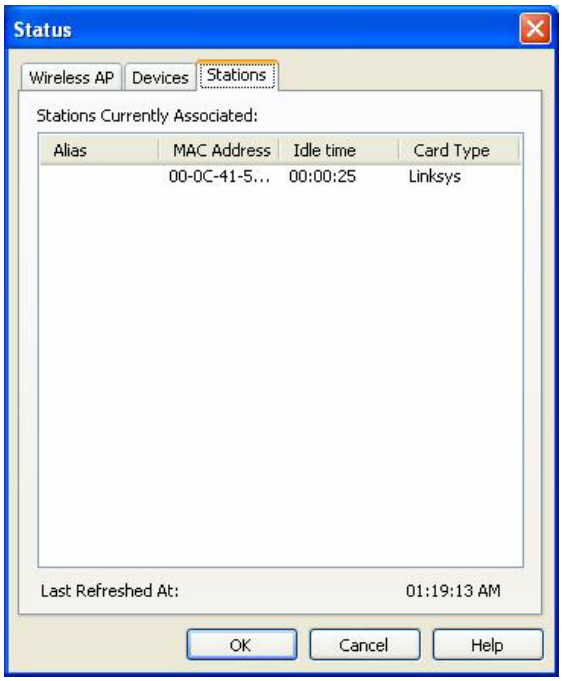

Figure 59: Status of Stations

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The **Stations** tab displays Status of Stations (Clients) associated with your HP PC when your HP PC is in Access Point Mode. The Stations tab shown in figure 59 shows that the HP PC was connected to a Linksys device with no Alias assigned. MAC address information and idle time are also displayed.

8.2.3 Help Menu

Figure 60: Wireless SoftAP™ Help menu

The Wireless SoftAP™ Help menu provides information on the SoftAP™ .

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8.3 Setting Security

After launching the SoftAP™ it is highly recommended that wireless security is set-up. Choose the type of security encryption (WEP or WPA) consistent with your other wireless equipment and follow the instructions given in either Section 8.3.1 (WEP Security Settings) or in Section 8.3.2 (WPA Security Settings).

8.3.1 WEP Security Settings

WEP (Wired Equivalency Protocol) Open Key is an encryption standard for 802.11 devices that provides security for wireless LANs. The "key" used is the "password" should be the same for all 802.11b/g devices you wish to connect, including your HP PC.

Important
Security can be set up using either WEP (Wired Equivalency Protocol) or WPA (Wi-Fi Protected Access). It is important to set up matching security types between 802.11 devices. Be certain to check the type of security on your other wireless 802.11b/g device(s) in order to decide which type of security needs to be set up on your HP PC.

To set WEP security on your HP PC:

1. Left click on the SoftAP™ icon in the system tray (shown in figure 61) to open the Wireless SoftAP™ dialog box.

Software Access Point System Tray icon.

Figure 61: Software Access Point icon

The Wireless SoftAP™ dialog box will appear.

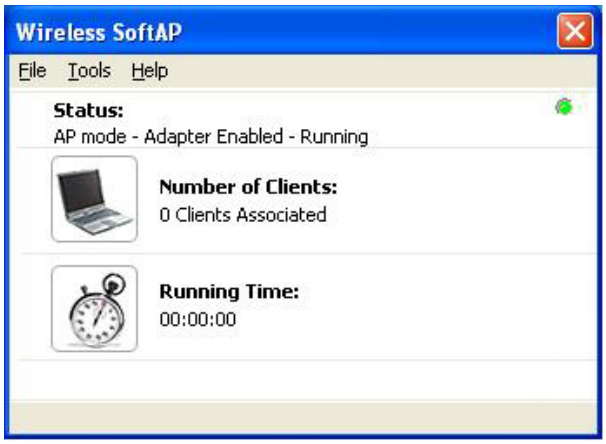

Figure 62: Wireless SoftAP™ dialog box

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2. From the **Tools** menu select **Options….**

The Options dialog box will appear.

3. Select the **Wireless AP** tab

The Options box will display the Wireless AP tab.

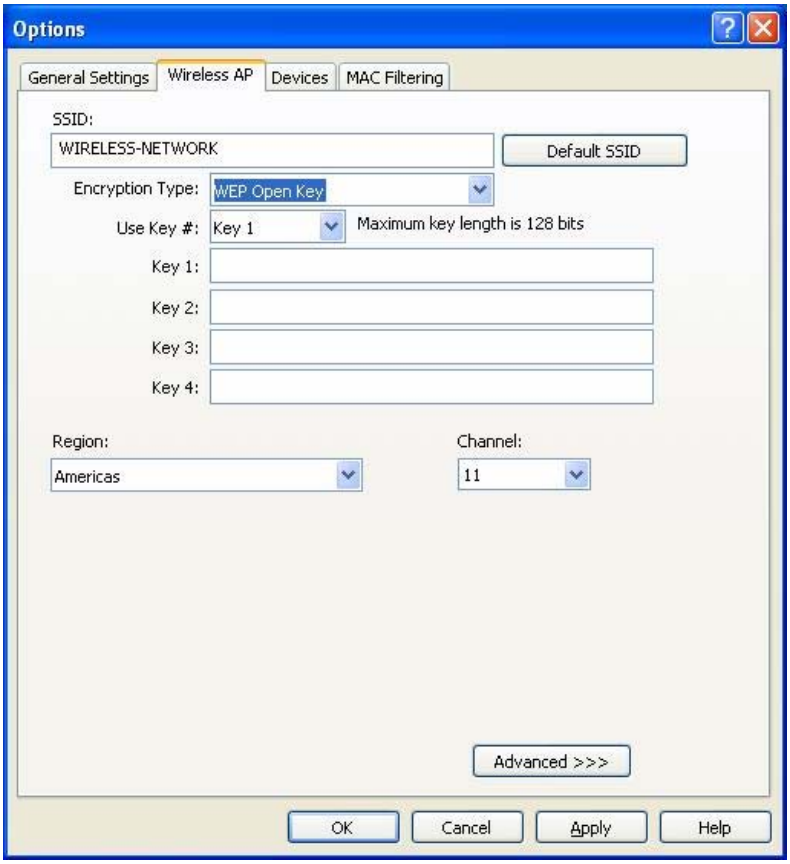

Figure 63: WEP Security choices

4. From the Encryption Type drop box select **WEP Open Key**

The Key boxes appear as shown in figure 63. It is possible to save up to four keys for use, yet only one at any given time can be active.

5. In the **Use Key** drop box select key 1

Note: *If you have already saved other keys you may select the one that applies to your wireless network.*

6. Enter your key into the box for Key 1

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Note: *In order to enter the key it is necessary to use the following format:*

- ***ASCII*** *(allows letters ranging from a – z and numbers from 0 – 9)*
  - *5 characters for 40 bit encryption*
  - *13 characters for 128 bit encryption (stronger form of security)*

- ***HEX*** *(allows letters ranging from a – f and numbers from 0 – 9)*
  - *10 characters for 40 bit encryption*
  - *26 characters for 128 bit encryption (stronger form of security)*

7. Select **Apply**

WEP security is now established and your HP PC should be able to communicate with your wireless network.

To check the status of your connection refer to section 8.2.2.5.

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8.3.2 WPA Security Settings

Important
Security can be set up using either WEP (Wired Equivalency Protocol) or WPA (Wi-Fi Protected Access). It is important to set up matching security types between 802.11 devices. Be certain to check the type of security on your other wireless 802.11b/g device(s) in order to decide which type of security needs to be set up on your HP PC.

To set WEP security on your HP PC:

1. Left click on the SoftAP™ icon in the system tray (shown in figure 64) to open the Wireless SoftAP™ dialog box.

Software Access Point System Tray icon.

Figure 64: Software Access Point icon

The Wireless SoftAP™ dialog box will appear.

Figure 65: Wireless SoftAP™ dialog box

2. From the **Tools** menu select **Options….**

The Options dialog box will appear.

3. Select the **Wireless AP** tab

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The Options box will display the Wireless AP tab.

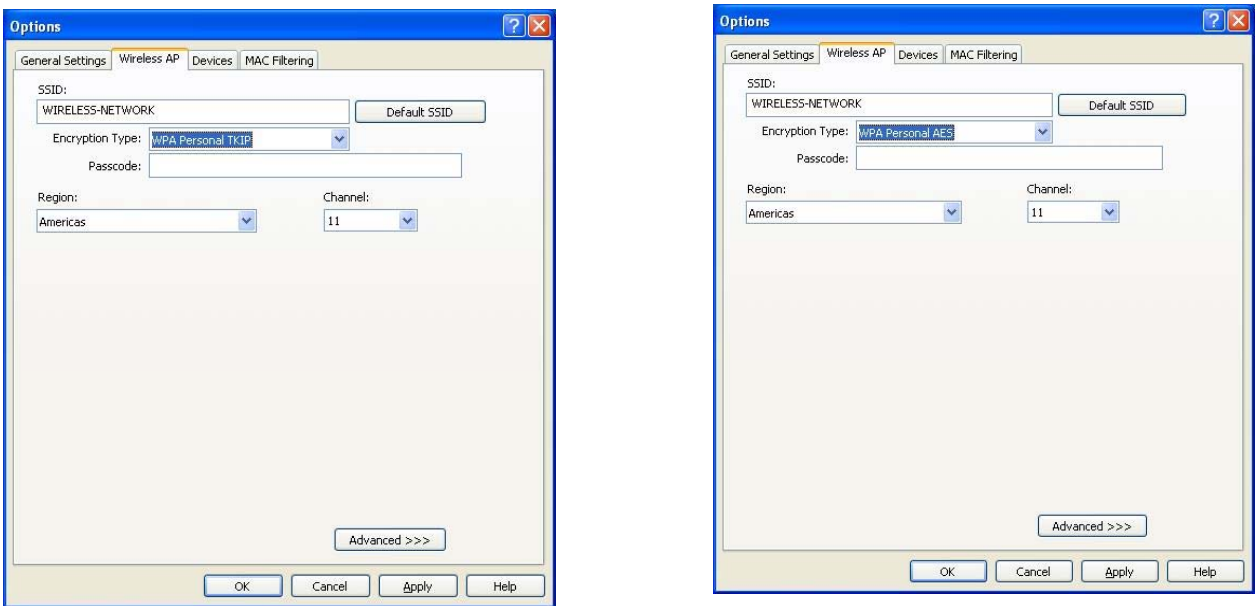

Figure 66: Wireless AP tab; WPA Personal TKIP & AES selected

4. From the Encryption Type drop box select either **WPA Personal TKIP** or **WPA Personal AES.**

The Key boxes appear as shown in figure 66.

Note: *If you have already saved other keys you may select the one that applies to your wireless network.*

5. Enter your passcode (key).

Note: *In order to enter the key it is necessary to use the following format:*

- ***ASCII*** *(allows letters ranging from a – z and numbers from 0 – 9)*
  - *8 characters for 40 bit encryption*
  - *63 characters for 128 bit encryption (stronger form of security)*

- ***HEX*** *(allows letters ranging from a – f and numbers from 0 – 9)*
  - *64 characters for 40 bit encryption*

6. Select **Apply**

WPA security is now established and your HP PC should be able to communicate with your wireless network.

Note: If you experience difficulties using WPA security on your HP PC configure your wireless network and the SoftAP™ settings to WEP security.
To check the status of your connection refer to section 8.2.2.5.

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9 Station Mode

Note that if Station Mode settings were applied in Windows® XP Wireless Zero Configuration those settings are still in effect while functioning in Station Mode after Access Point Mode has been activated.

9.1 Launching the SoftAP™

There are two ways to launch the Software Access Point: Through the SoftAP™ icon in the system tray of your desktop or through the SoftAP™ icon menu. Either method will bring up the Wireless SoftAP™ dialog box.

To launch the Software Access Point by using the icon in the System Tray simply left click the icon once.

Software Access Point System Tray icon.

Figure 67: Launching; Software Access Point icon

OR

It is possible to launch the SoftAP™ with a right click on the SoftAP™ icon. When a right click is made on the icon the SoftAP™ icon menu appears. Select **Show** from this menu to bring up the Wireless SoftAP™ dialog box.

Figure 68: Launching; Software Access Point icon menu

The Wireless SoftAP™ dialog box appears as shown in figure 69.

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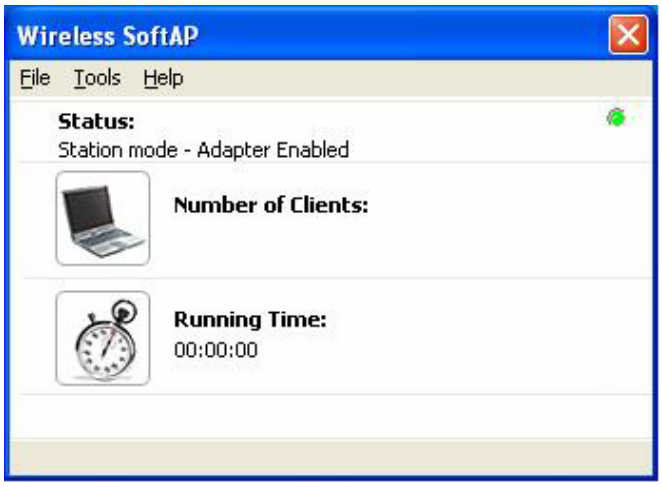

Figure 69: Wireless SoftAP™ dialog box

For a detailed explanation of the Wireless SoftAP™ dialog box in Station Mode refer to Section 9.2.

9.2 The Wireless SoftAP™ Dialog Box

The Wireless SoftAP™ dialog box as shown in figure 70 (Station Mode) is the primary hub of the SoftAP™ application. From this box all of the major functions (security, device viewing and mode switching) can be accomplished.

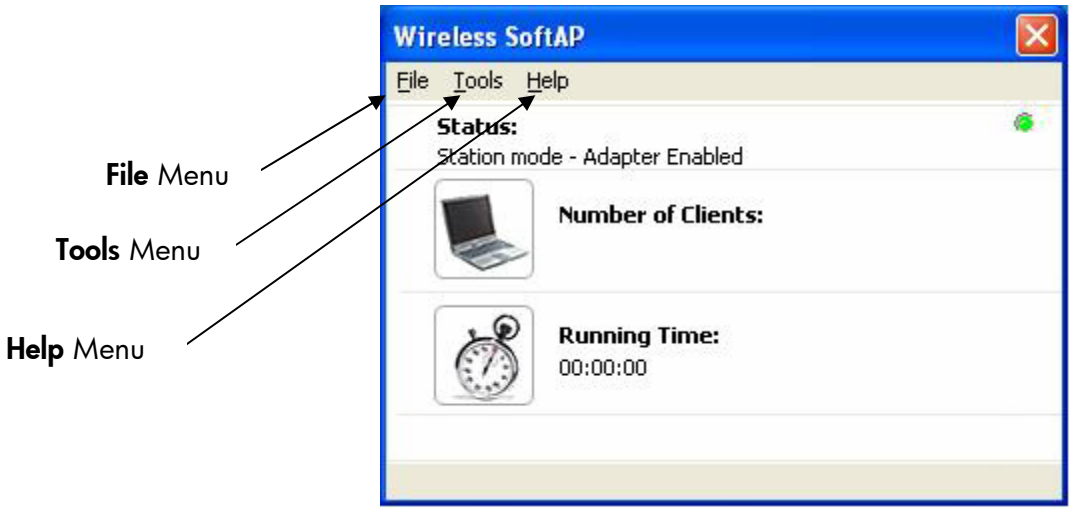

Figure 70: Wireless SoftAP™ ; Station Mode

The Wireless SoftAP™ dialog box consists of three drop-down menus: **File**, **Tools** and **Help**.

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9.2.1 File Menu

Figure 71: Wireless SoftAP™ File menu

There are two **File** menu choices:

- **Minimize to System Tray** (section 9.2.1.1)
- **Exit** (section 9.2.1.2)

9.2.1.1 Minimize to System Tray

minimizes the Wireless SoftAP™ dialog box to the SoftAP™ icon in your system tray. It is necessary to open it again when desired by clicking the icon.

9.2.1.2 Exit

exits you from the SoftAP™ application altogether. The SoftAP™ icon will no longer be present in the system tray of your HP PC and you will need to reboot the HP PC in order to regain the icon.

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9.2.2 Tools Menu

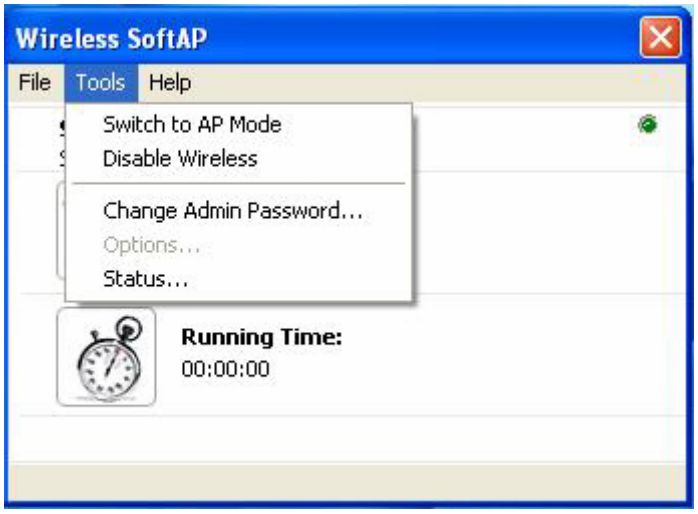

Figure 72: AP Mode Tools menu

There are four **Tools** menu choices:

- **Switch to AP Mode** (Section 9.2.2.1)
- **Disable Wireless** (Section 9.2.2.2)
- **Change Admin Password….** (Section 9.2.2.3)
- **Options….** (Section 9.2.2.4)

Note*: The **Options….** Menu item does not function while in Station Mode as contents pertain to Access Point Mode (AP Mode).*

- **Status….** (Section 9.2.2.5)

9.2.2.1 Switch to Access Point Mode

Switching to Access Point Mode (AP Mode) is necessary when your HP PC needs to be used as an access point instead of as a client (Station Mode). Switching between Modes is easy through the SoftAP™ tools menu selection **Switch to AP Mode** (See figure 72).

Note: *If you have switched between modes before any settings applied to previously will remain in effect when AP Mode is again applied.*

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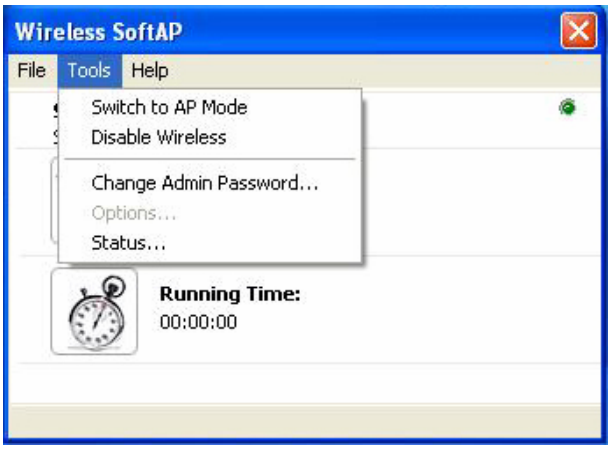

Figure 73: Station Mode Tools menu

Select Switch to AP Mode in order to begin the operation. Once selected from the Tools menu the following screens will appear while the Wireless SoftAP™ applies the SoftAP™ network settings:

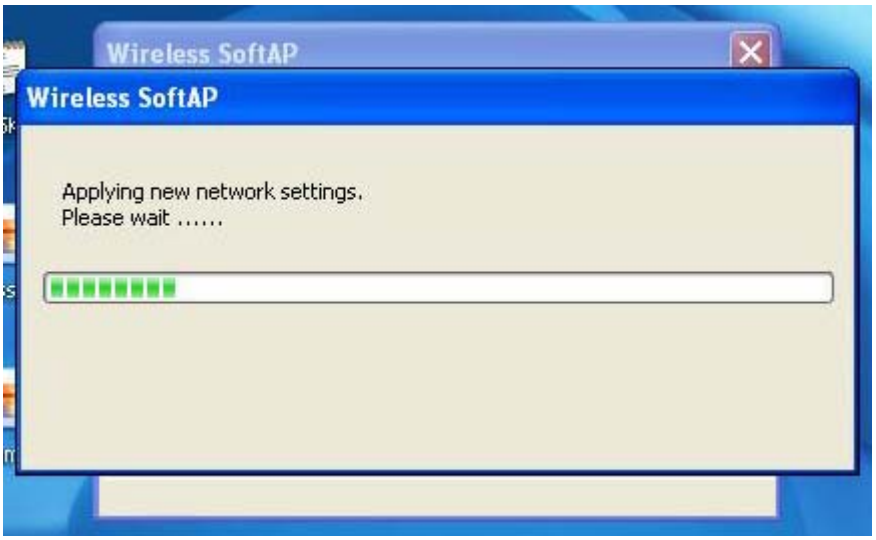

Figure 74: Switch to Access Point Mode

As your HP PC switches wireless connection settings you will be asked to wait (see figure 74).

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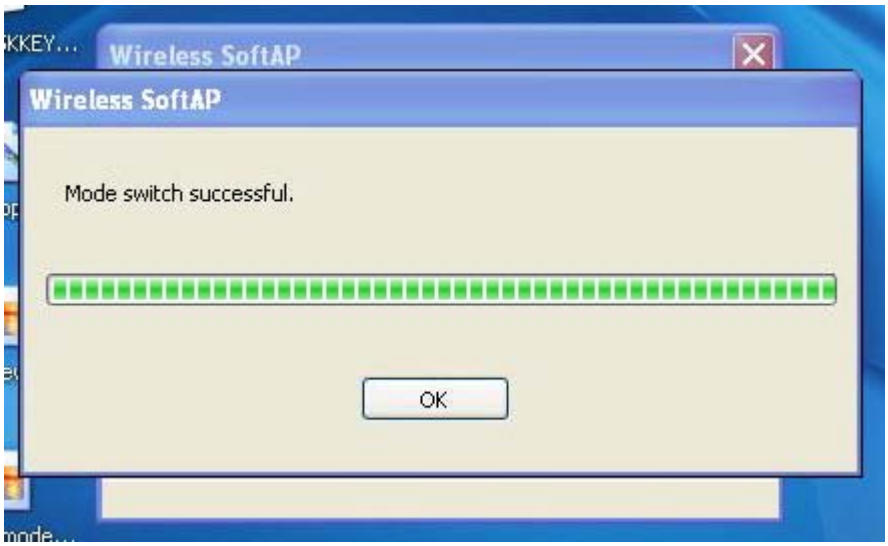

Figure 75: Access Point Mode switch successful

You will be prompted to select **OK** when the switch to Access Point Mode is complete.

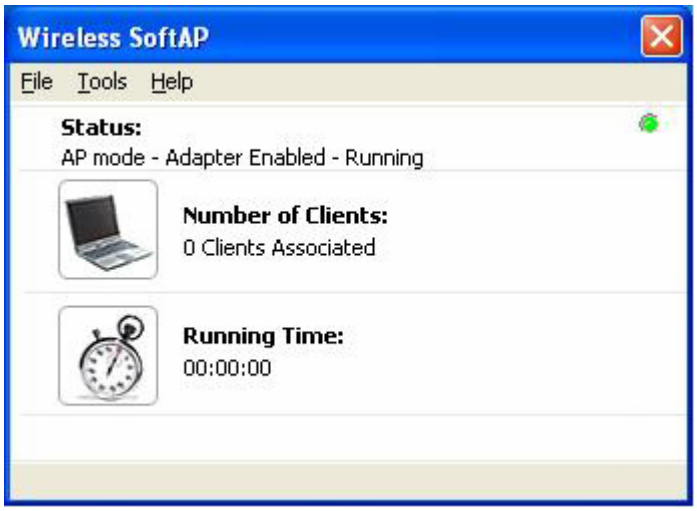

Figure 76: SoftAP™ in Access Point Mode

Once the Wireless SoftAP™ has finished switching to Access Point Mode the status will read "AP mode – Adapter Enabled – Running" and the number of clients associated will appear under "Number of Clients" as shown in figure 76.

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9.2.2.2 Disable / Enable Wireless

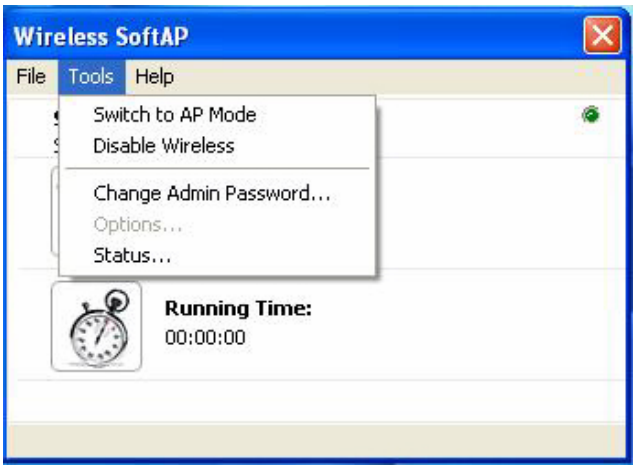

Figure 77: Wireless SoftAP™ dialog box. Tools menu

From the Tools menu it is possible to disable the Wireless SoftAP™ by selecting **Disable Wireless** (See figure 77). Once disabled the Wireless SoftAP™ dialog box will display "Station Mode – Adapter Disabled" under Status as shown in figure 78 below.

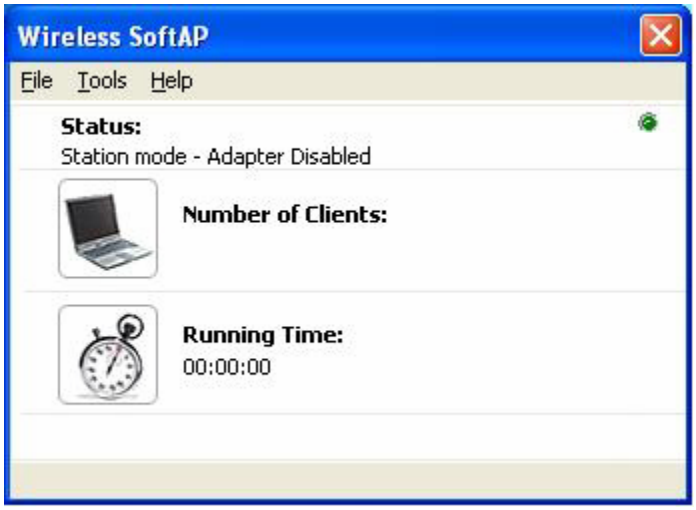

Figure 78: Wireless SoftAP™ dialog box; Wireless Disabled

Note: *When wireless is disabled on your HP PC wireless connections will not be functioning nor can they be established. Wireless must be enabled again in order to connect with other wireless devices or to re-establish pre-set wireless connections.*

Once disabled your Wireless LAN 802.11b/g Device can be re-activated through use of the same menu as seen in Figure 79 below.

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Figure 79: Tools menu; Enable Wireless

In order to enable the Wireless LAN 802.11b/g Device to begin functioning again select **Enable Wireless** from the Tools menu (figure 79).

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9.2.2.3 Change Admin Password…

SoftAP™ allows setting of an Admin password through the Tools menu when in AP Mode. The SoftAP™ does NOT allow setting or changing the Admin Password while in Station Mode as the Admin Password locks Options… in the Tools menu, a selection that is not applicable to Station Mode.

The Tools menu displays the choice to Change Admin Password, yet the Change Password dialog box will NOT accept passwords, even if entered in the "correct" format.

Refer to section 8.2.2.3 for instructions on how to set an admin password in AP Mode.

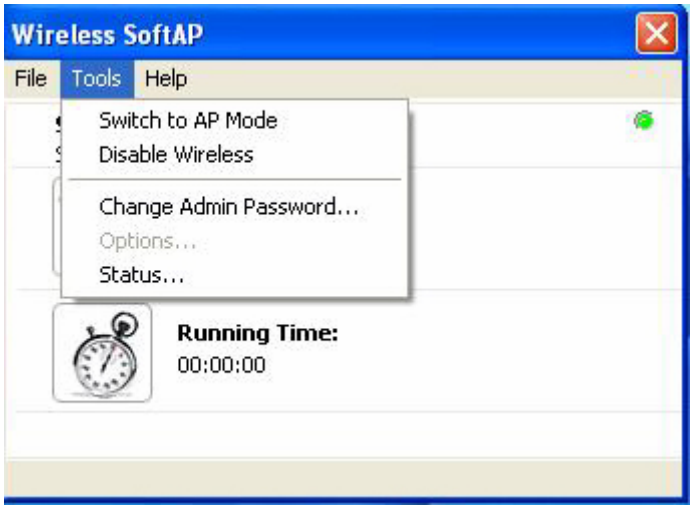

Figure 80: Tools menu; Change Admin Password…

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Figure 81: Change Password dialog box

Note: *The admin password is not applicable in Station Mode as Options is not an available menu selection while running in Station Mode.*

9.2.2.4 Options…

The Options menu selection is not applicable while in Station Mode and is displayed in grey on the Tools menu as it is not an available selection.

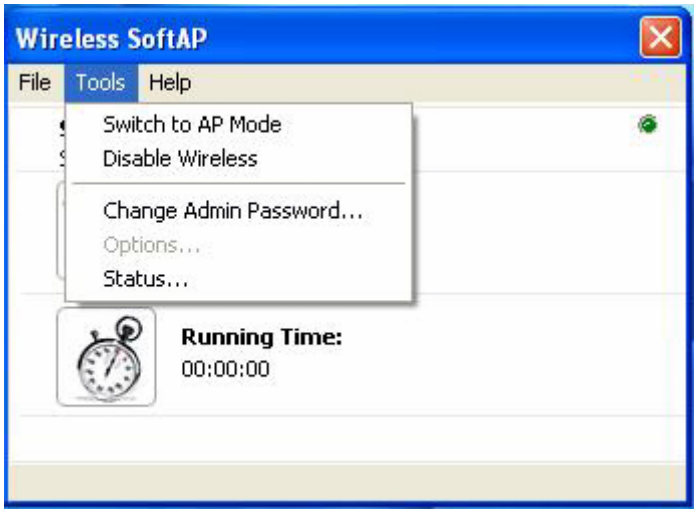

Figure 82: Tools menu; Options Selection

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9.2.2.5 Status…

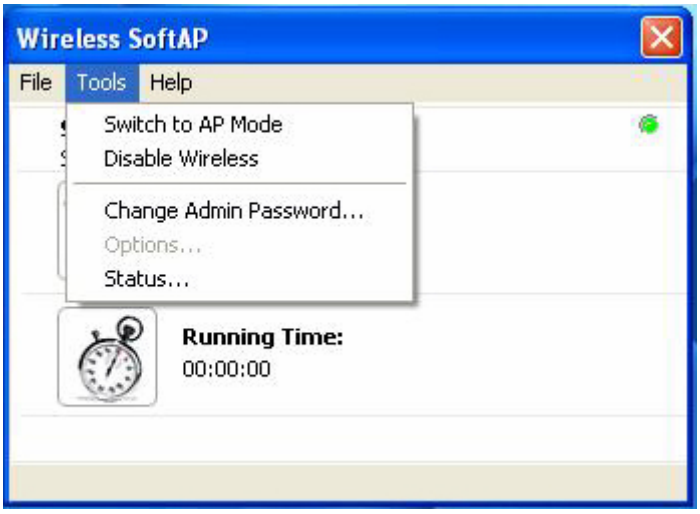

Figure 83: Tools menu; Status….

Select **Status** from the Options menu to display status of the SoftAP™ or Devices.

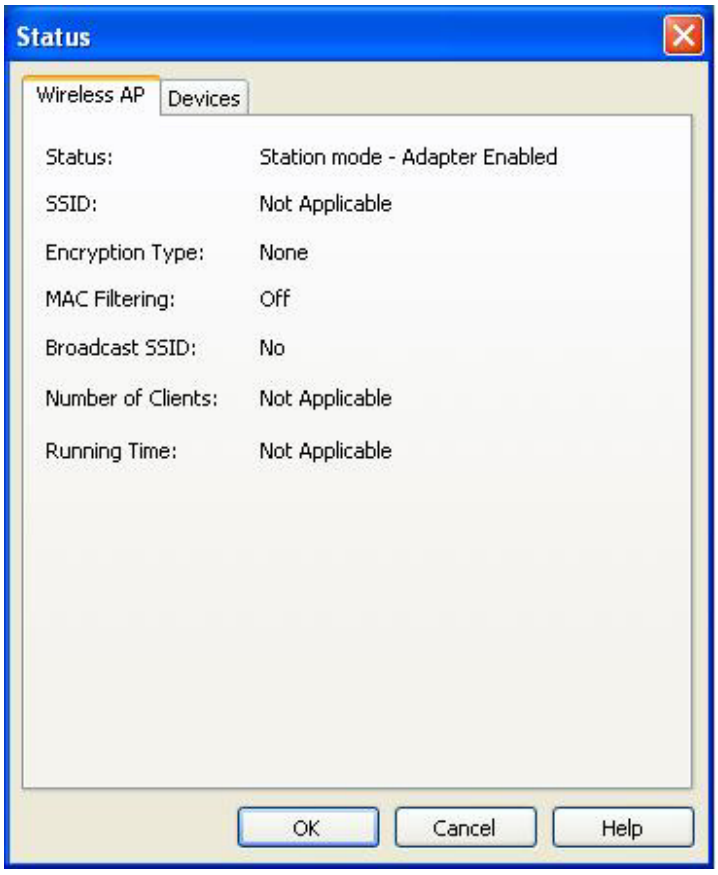

Figure 84: Status of Wireless AP

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The **Wireless AP** tab is displayed when Status is selected in the Tools menu. The Wireless AP tab shown in figure 84 shows the following:

- **Status**: The SoftAP™ is enabled and running in Station Mode
- **SSID**: The SSID is not applicable because an SSID is not broadcast while in Station Mode
- **Encryption Type**: No security has been set up between the wirelessly connected devices

Note: *It is not recommended to connect wireless devices of any kind without establishing security settings. See Chapter 4 for instructions on how to establish either WEP or WPA security while in Station Mode.*

- **Number of Clients**: "Not Applicable" is displayed as it is only possible to have clients while in AP Mode
- **Running Time**: "Not Applicable" is displayed as it is not possible to have clients connected while in Station Mode

Select the Devices tab to display Device status. The **Devices** tab shown in figure 85 shows properties of the network configuration.

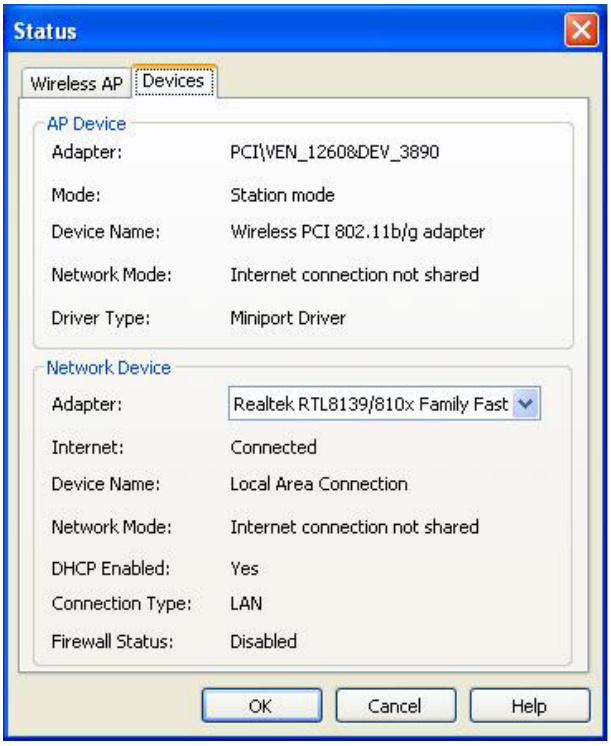

Figure 85: Status of Devices

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9.2.3 Help Menu

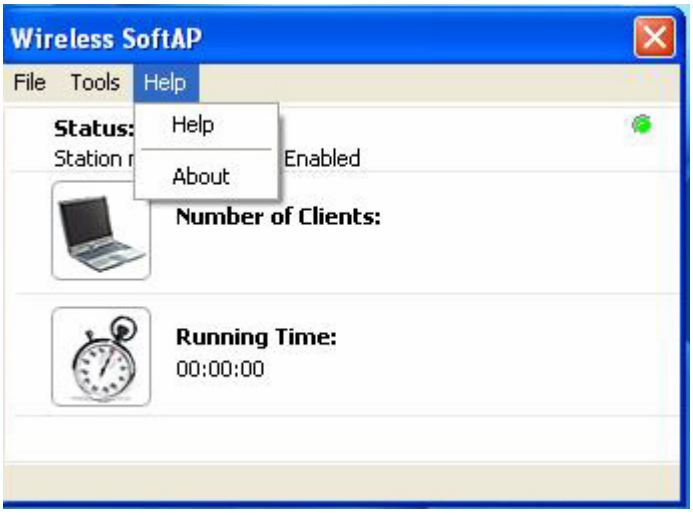

Figure 86: Wireless SoftAP™ Help menu

The Wireless SoftAP™ Help menu provides help with the application and information on the SoftAP™ .

9.3 Setting Security

Security settings while in Station Mode are not available through the SoftAP™ interface. For complete instructions on how to set up security in Station Mode refer to Chapter 4.

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10 Uninstalling the SoftAP™

In order to uninstall the SoftAP™ :

1. Right click on soft AP icon in your system tray
2. Select **Exit** from the SoftAP™ menu to exit the software

On the desktop:

3. Go to **start**
4. Select **Control panel**
5. Select **Add or remove programs**
6. Scroll to "Wireless SoftAP™ ……"
7. Highlight "Wireless SoftAP™ …."
8. Select **Change/Remove**

The InstallShield Wizard appears

InstallShield Wizard
Welcome
Repair, or remove the program.
Welcome to the Wireless SoftAP Version 2.0.17.0 Setup Maintenance program. This program lets you modify the current installation. Click one of the options below.
Repair
Reinstall all program features installed by the previous setup.
Remove
Remove all installed features.
InstallShield
< Back
Next >
Cancel

Figure 87: InstallShield Wizard

Repair will be selected by default on the InstallShield wizard (see figure 87).

9. Select **Remove**
10. Select **Next**
11. Select **OK** when the Uninstall dialog box appears to confirm

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NetCfgWizard
Do you want to keep the adapter's driver?
Removing the driver will cause your adapter to stop functioning.
Yes
No

Figure 88: NetCfgWizard dialog box

The NetCfgWizard dialog box appears.

12. Select **Yes** in the Netcfg wizard dialog box

You will be asked to wait while InstallShield completes the uninstall. Once the uninstall is complete:

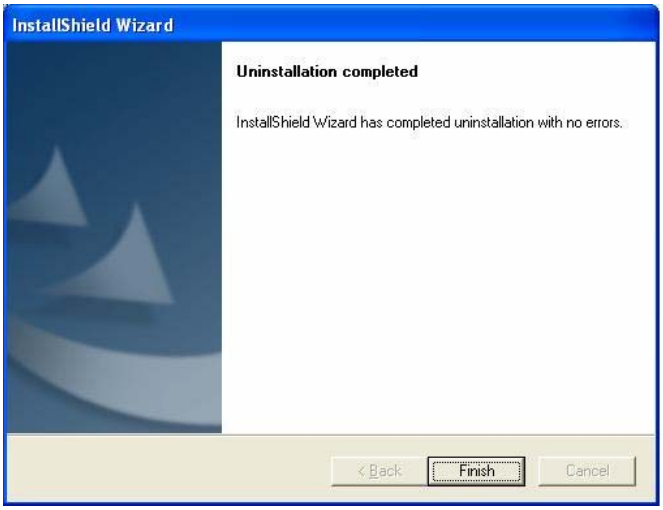

Figure 89: InstallShield Wizard complete

13. Select **Finish**
14. Close all dialog boxes and applications
15. Restart your HP PC

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Terms

- **Access Point (AP)** — A hardware device (possibly a PC) that can act as a communication hub for wireless devices enabling them to connect to a wired LAN (Local Area Network) or to one another.
- **ASCII (American Standard Code for Information Interchange)** — A code used for encryption that represents letters with numbers.
- **Broadband Router** — A device which lets multiple client devices share a single internet connection (like DSL, Cable modem or T1). Generally Broadband Routers offer rudimentary network address translations and firewall features.
- **Client** — A device that acquires networking services from another device like another PC or access point.
- **DNS Server** — Domain Name System / Service / Server is a service available on the internet that translates domain names into IP addresses.
- **Encryption** — The most efficient way to achieve data security online. Encryption is a method of coding data. Generally it is necessary to provide a secret key or password in order to receive decoded information when encrypted.
- **Gateway** — A gate or entrance into a network. The ISP connecting a home to the internet is generally the gateway in a residence.
- **HEX** — A numbering system used in encryption. HEX is a 16 symbol system consisting of the numbers 0 – 9 and A – F.
- **IP Address** — An address that identifies devices on a TCP/IP network (eg; 192.168.0.2).
- **ISP (Internet Service Provider)** — A company that provides access to the internet.

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Terms
Continued

• **MAC Address**	Media Access Control Address. On an 802.11 network the MAC address is used to identify each node of the network.
• **Network Name**	See SSID
• **Network Key**	Network password.
• **SoftAP™**	Software application on your HP PC which allows you to establish a wireless network using your PC as a wireless access point or as a wireless client (station mode).
• **SSID (Service Set Identifier)**	The unique identifier attached to the header of packets sent over a Wireless Local Area Network (WLAN). The SSID differentiates Wireless LANs from one another. For this reason an SSID must be entered on each wireless device attempting to connect on the WLAN.
• **Station**	See Client.
• **WEP**	Wired Equivalency Protocol. WEP is an 802.11 encryption standard that provides security for wireless LANs.
• **Wireless LAN**	A wireless version of Ethernet, the Wireless Local Area Network enables wireless internet access through your SoftAP™ or broadband router.
• **Wireless Network**	See Wireless LAN.
• **WPA**	Wi-Fi Protected Access. WPA is an addition to the security in the 802.11 standard. It is an enhancement to the original security implementation for 802.11 devices.
• **WPA Personal AES**	(Advanced Encryption Standard). See WPA.
• **WPA Personal TKIP**	(Temporal Key Integrity Protocol) See WPA.

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Appendix A: Troubleshooting

Problem	Recommended Solution
I have installed the SoftAP™ , yet am not able to see the system tray SoftAP™ icon	• First restart your system. If the problem persists…… • Uninstall the SoftAP™ (see Chapter 8) and Activate it again (see Chapter 5). If the problem persists…… • Contact customer support.
The SoftAP™ icon used to be in my system tray, yet is no longer there.	• Restart your system. The icon should appear again in the system tray. If the problem persists…… • Uninstall the SoftAP™ (see Chapter 8) and Activate it again (see Chapter 5).
I have set up my wireless connection in AP Mode, yet am unable to connect a Station (Client machine).	• It is possible that the wireless mode has been disabled. In the Wireless SoftAP™ dialog box select the Tools menu. If the second menu item reads "Enable Wireless", then select "Enable Wireless to activate the wireless connection. • Verify that the Security (Network Key) matches that of the machine you are attempting to connect. For AP Mode see sections 6.3.1 and 6.3.2. For Station Mode see sections 4.2.1 and 4.2.2.

CONTINUED

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I have set up my wireless connection in AP Mode, yet am unable to connect a Station (Client machine).	• Verify that the MAC address has not been filtered. >>Wireless SoftAP™ dialog box >>Tools menu >>Options >>MAC Filtering tab >>verify that if "Enable MAC Filtering" is enabled AND "Deny Access by MAC Address" is selected as the Filter Method, then the Station MAC address of the machine you are attempting to connect should not be listed and selected. >>IF "Enable MAC Filtering" is enabled AND "Allow Access by MAC Address" is selected as the Filter Method, then the Station MAC address of the machine you are attempting to connect should be listed and selected. • In the Wireless SoftAP™ dialog box select the Tools menu. If the second menu item reads "Disable Wireless", then contact customer support.
After activating the SoftAP™ application I am unable to access my settings for Station Mode / the settings input during Windows® XP Wireless Zero Configuration.	• The SoftAP™ application is initialized in Access Point Mode by default. From the Wireless SoftAP™ dialog box select the **Tools** menu and select **Switch to Station Mode** (See Section 6.2.2.1for instructions on switching to Station Mode).
After installing the Wireless SoftAP™ I am able to connect from my laptop (client), yet am unable to browse the internet.	• Check that your network is set up to be shared. From the Wireless SoftAP™ dialog box select the Tools menu and select Options. Select the Devices tab. Verify that the check box at "Share my network connection" is selected. If the problem still persists……. • Verify your internet connection with your ISP.
My WPA security settings are not working properly.	• Verify that your Network Keys are entered correctly. If the problem persists…… • Switch to WEP security on both SoftAP™ applicataion. For AP Mode see section 6.3.2. For Station Mode see section 4.2.2.

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I am unable to see my Network name in the Available wireless networks section of the Wireless Network Connection dialog box in Station Mode on my HP PC.	• Verify your Network name and Security settings. If the problem persists…… • Consult the user's manual for your Wireless Gateway or Access Point.
What happens if I forget my Admin Password for the SoftAP™ ?	• Uninstall the SoftAP™ (see Chapter 8) and Activate it again (see Chapter 5). If the problem persists…… • Refer to the CD that came with this product. This CD contains the full User's Manual as well as a file called "password_reset.rgs". Double click this file to reset your password only after attempting to uninstall and reinstall.
I am having diffuculty with my VPN connection.	• Check your VPN server for related problems.
Internet Gaming issues	• For assistance with internet gaming issues please refer to Microsoft's internet gaming site.

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Appendix B: Regulatory Notices

Regulatory Notices

- To identify this product refer to the part or model number on the product label

Federal Communication Commission Notices

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
IMPORTANT NOTE:
FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Wireless LAN 802.11b/g Device

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European Notices

EC Conformance Declaration
This device compliance with the Essential Requirements of the R&TTE Directive of the European Union (1999/5/EC). This equipment meets the following conformance standards:
EN 60950 (IEC 60950) - Product Safety
EN 300 328 - Technical requirements for 2.4 GHz radio equipment
EN 301 489-1 / EN 301 489-17 - EMC requirements for radio equipment
Declaration of Conformity in Languages of the European Community

English	Hereby, Arcadyan Technology Corp, declares that this Radio LAN device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Finnish	Valmistaja Arcadyan Technology Corp vakuuttaa täten että Radio LAN device tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Dutch	Hierbij verklaart Arcadyan Technology Corp dat het toestel Radio LAN device in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG Bij deze Arcadyan Technology Corp dat deze Radio LAN device voldoet aan de essentiële eisen en aan de overige relevante bepalingen van Richtlijn 1999/5/EC.
French	Par la présente Arcadyan Technology Corp déclare que l'appareil Radio LAN device est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE
Swedish	Härmed intygar Arcadyan Technology Corp att denna Radio LAN device står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Danish	Undertegnede Arcadyan Technology Corp erklærer herved, at følgende udstyr Radio LAN device overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF

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German	Hiermit erklärt Arcadyan Technology Corp, dass sich dieser/ diese/dieses Radio LAN device in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMWi) Hiermit erklärt Arcadyan Technology Corp die Übereinstimmung des Gerätes Radio LAN device mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG. (Wien)
Greek	Με την παρουσα smc networks δηλωνει οτι radio LAN device συμμορφωνεται προσ τισ ουσιωδεισ απαιτησεισ και τισ λοιπεσ σΧετικεσ διαταξεισ τησ οδηγιασ 1999/5/εκ
Italian	Con la presente Arcadyan Technology Corp dichiara che questo Radio LAN device è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Spanish	Por medio de la presente Arcadyan Technology Corp declara que el Radio LAN device cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE
Portuguese	Arcadyan Technology Corp declara que este Radio LAN device está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.

Canadian Notice

Industry Canada - Class B

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled “Digital Apparatus,” ICES-003 of Industry Canada.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matérial brouilleur: “Appareils Numériques,” NMB-003 édictée par l’Industrie.

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Korean Notice

당해무선설비는 운용중 전파혼신의 가능성이 있슴.

제품명(모델 번호): WN4201B

신청자 이름: Accton

제조날짜: 2004년 5월 31일

제조업체/국가: Accton/대만 또는 중국

제품명(모델 번호): WN4501F

신청자 이름: Arcadyan

제조날짜: 2004년 5월 31일

제조업체/국가: Accton/대만 또는 중국

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Appendix C: Product Specifications

Specifications: Model Number WN4201B

Functional Criteria	
Data Rate	Up to 54 Mbps
Operating Range	Up to 30 m (100 ft) at 11 Mbps Up to 100 m (300 ft) at 5.5 Mbps or lower indoors
Radio Signal	
Modulation	Orthogonal Frequency Division Multiplexing (OFDM)
Operating Frequency	USA (FCC), Canada (IC): 2412~2462 MHz Ch 1~ Ch 11 Europe (ETSI): 2412~2472 MHz Ch 1 ~ Ch 13 Japan: 2412~2484 MHz Ch 1 ~ Ch 14
Operating Channel	USA, Canada: 11 Channels ETSI: 13 Channels Japan: 14 Channels
Physical Charactaristics	
Power Consumption	TX: 450 mA, RX: 360 mA
Dimensions	12 x12 x 1.8cm (4.72 x 4.72 x 0.07 in.)
Antenna	External Antenna
LED Indicator	Power, Link, Activity
Host Interface	PCI specification v.2.2

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Specifications: Model Number WN4201B
Continued

Standards Conformance	
Wireless Standard	IEEE 802.11g, Wi-Fi, WPA
Environmental	
Temperature	Operating: 0 to 55 °C (32 to 131 °F) Storage: -20 to 75 °C (-4 to 167 °F)
Humidity	5 to 90% (non-condensing)
Certification	
Emissions	EN 55022 Class B EN 61000-4-2/3/4/6/11 FCC Part 15 (B)
Safety	EN60950
ETSI	EN300328, EN301489
Software Drivers	
NDIS Drivers	Windows XP
Antenna Specification	
Antenna Type	External Antenna
Frequency Band	2.4 ~ 2.5GHz
Polarization	Vertical
Connector	Reverse SMA Connector

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Specifications: Model Number WN4501F

Functional Criteria	
Data Rate	Up to 54 Mbps
Operating Range	Up to 30 m (100 ft) at 11 Mbps Up to 100 m (300 ft) at 5.5 Mbps or lower indoors
Radio Signal	
Modulation	Orthogonal Frequency Division Multiplexing (OFDM) Complementary Code Keying (CCK)
Operating Frequency	USA (FCC), Canada (IC): 2412~2462 MHz Ch1~Ch11 Europe (ETSI): 2412~2472 MHz Ch1~Ch13 Japan: 2412~2484 MHz Ch 1~ 14 Canada: 2412 ~ 2462 MHz Ch 1~11
Operating Channel	USA, Canada: 11 Channels ETSI: 13 Channels Japan: 14 Channels
Physical Characteristics	
Power Consumption	TX: 485 mA Max; RX: 330 mA
Antenna	External antenna and internal antenna
LED Indicator	One Power / Link, ACT
Host Interface	USB 2.0

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Specifications: Model Number WN4501F
Continued

Standards Conformance	
Wireless Standard	IEEE 802.11g, Wi-Fi, WPA
Environmental	
Temperature	Operating: 0 to 55 °C (32 to 131 °F) Storage: -20 to 70 °C (-4 to 157 °F)
Humidity	5 ~ 90% (non-condensing)
Certification	
Emissions	EN 55022 EN 50024 FCC Part 15 (B) ICES-003 AS/NZS 3548
Safety	EN60950
ETSI	EN300328, EN301489
Software	
Operating System	Windows ME, Windows 2000, Windows XP
Antenna Specification	
Antenna Type	External Antenna
Frequency Band	2.4 ~ 2.5GHz
Polarization	Vertical
Impedance	50 Ohms nominal

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Specifications: Model Number WN4501F
Continued

Gain	Max gain: 1.43 dbi
	Avg gain: 1.19 dbi
Radiation	Omni-directional
Max. Power Rating	2W

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